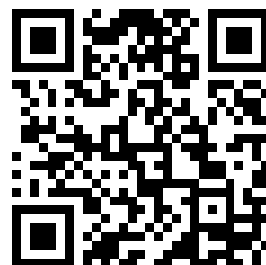

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INDEX TO TELEGRAPH AND TELEPHONE AGE

JANUARY 1 TO DECEMBER 16, 1916 (both inclusive)

Articles marked with an Asterisk (*) are illustrated.

A

Accumulators Stored	462
Adjustment of Telegraph Apparatus	125
Alaska, Telegraph and Telephone Development in,	327
Alaskan Engineering Commission, Staff of,	510
Ambition, Cornerstone of, by R. M. Telschow.....	372
American Dist Telegraph Co. of New York.....	126
Ammeters and Voltmeters*....	94
Answers to Questions, 40, 108, 217, 260, 310, 387, 438, 469, 538.	
Associated Press, 23, 71, 87, 130, 153, 235, 274, 325, 364, 400, 504, 526.	
Associated Press The,—What It Is*.....	33, 87, 132
Associated Press Operators Commended	235
Delivery of Press Dispatches by Telegraph	153
Austin, J. B., Retirement of... 423	
Australian Telegraph Deficit..	103
Automatic Telegraph, Invasion of, by L. C. Booschever.....	338

Authors

Adams, C. C., The Mosquito, Its History and Habits ...	486
Barclay, J. C., Advocates Government Ownership...	76
Boes, W. W., Voltmeter Testing	555
Brach, L. S., Street Signals and Traffic Warnings in Connection with Fire Apparatus	516
Brown, H. W., New Universal Shunt	556
Burke, J. E., Success.....	253
Clapp, M. H., The Problem of Transposition Systems.	287
Collins, W. H., Tying and Splicing of Copper Wire..	207
Cone, C. J., The Boomer....	60
Corson, R. F., The "Erie" Short Cut	241
Davis, M. M., Testing Quadruplex and Duplex Instruments*	233
Daymude, J. F., Everyone Can Remember	241
Derrick, L., Early Wireless	113
Dillon, J. B., Ohm's Law...	205
Dillon, J. B., The Menace of Gasoline	265
Dreher, C., Key Manipulation in Wireless Telegraphy	365
Eaves, A. J., Method of Locating Two Crosses Between the Same Pair of Wires	340
Edwards, J. L., Ohm's Law.	251
Emmons, H. A., Printer Systems	209
Frederick, A. H., Observation and its Relation to the Repeater Man	484
Fullerton, A., Collin's Overland Line to Europe	410
Greene, O. C., Troubles of a Trouble Man	228

Hall, J. E., First American Telegraph Company	42
Hayes, J. W., Resurrection..	496
Hilliker, H. V., Rapid Rise from Office Boy to General Manager	345
Howell, J. F., Thrift—The Nation's Future Strength.	119
Howell, J. Frank, In Every Name a Story	539
Johnson, J. N., Proposed Sanatorium for Telegraphers	156
Jones, W. H., The Old Timer	135
Jones, W. H., The Old Timer and Old "105"	211
Jones, W. H., In Every Name a Story	485
Langley, C. R., The "Erie" Short Cut	205
Lewis, H. V., Modification of Varley Loop Test	397
McKee, C. J., Handling of Bridge Polar Duplex, 259, 294, 326, 341, 363, 390	
McKee, C. J., Making Your Work Easy	446
Miller, J. S., Time System for Telephone Operating Rooms	276
Murphy, F. D., Monitorial Dictaphone Observations.	436
Pettengill, H. J., Sidelights on Success	386
Rhoads, C. S., Early Telephone Experiences on Railroads	117
Riddick, J. V., Good Reading	395
Riddick, J. V., Conversation	260
Riddick, J. V., Prudence ...	9
Schmidt, J. H., The Dry Cell and How it is Made	470
Skirrow, J. F., Combined Telegraph and Telephone Operation	303
Skirrow, J. F., The Telephone	158
Smith, R. A., The National Electrical Code and its Value to the Municipal Electrician	441
Snyder, J. W., Temperature Coefficient of the Varley Bridge	471
Spillane, R., Successful Telegraphers	469
Strudwick, S. H., Visit to a Wireless Station in Labrador	473
Stumm, F. A., Telegraph Reminiscences	434
Stumm, F. A., Telegraphing by Eye Winks	40
Tashrak, Efficiency	461
Telschow, R. M., Four to the Wind	86
Telschow, R. M., The "Erie" Short Cut	162
Telschow, R. M., Early Boyd Arrives	234
Telschow, R. M., Wire Testing an Exact Science	288
Telschow, R. M., Cornerstone of Ambition	372
Telschow, R. M., Why Operator Hamm Reported Late	388

Telschow, R. M., Modern Telegraph Service	433
Thompson, C. F., First Postal Underground Wires in Washington	181
Tierney, P. J., Julesburg Murf	434
Tuttle, E. B., Bipolar Telephone Receiver	36
Tuttle, E. B., Telephone Repeating Coils	336
Underhill, C. R., The Electromagnet	187
Vail, J. C., Early Telegraph Companies	229
Vail, J. C., The First Telegraph Line	277
Vail, J. C., First Operator to Receive by Sound	459
Wein, S., Is the Telephone a New or an Old Invention?	558
Wolf, H. M., General Notes on Grounding	38
Wilkins, B. C., Romance of a Telegrapher	347
Winterbottom, W. A., The Wireless Operator's Future	15

B

Battery, Primary, The.....	586
Batteries in Circuit, Best Position of	375
Blind French Soldiers as Operators	457
Bonus or Premium System of Pay	131
Boomer, The, By C. J. Cone..	60
Boston Mutual Aid Association, Annual Meeting.....	145
Boston Telegraphers' Aid Society, Reception	97
Brains, Do You Use Your...	275
Bridge Coils	434
Bug, Cable-Eating	505
Burns, P. H., Nassau, Bahamas*	186
Busy Man, A	443

Biographical

Austin, J. B.....	423
Barfield, C. V.*.....	85
Barfield, H. E.....	161
Bedlow, C. C.....	93
Butler, G. D.....	54
Colvin, E. E.....	283
Canniff, W. H.....	490
Carroll, T. W.....	406
Clapperton, G.....	505
Chase, E. O.....	11
Collette, N. T.....	428
Collins, E. R.....	223
Cook, M. T.....	79
Cushing, F. W.....	279
Davies, J. G.....	430
Derrick, L.....	77
Edwards, J. P.....	382
Emrich, H. C.....	161
Farrell, Jr., F. J.....	383
Gaunt, C. H.....	79
Haig, S. B.....	382
Hayden, M. J.....	430
Hood, G. D.....	393
Hood, G. E.....	235
Hyland, J. R.....	429
Jewett, F. B.....	573
Lewis, J. W.....	472
McCann, C. B.....	454

- MacFarlane, L. B. 250
 Mitchell, Claude 489
 Nathan, J. F. 407
 Redmond, R. H. 162
 Rhoads, Jr., C. S. 417
 Rounds, J. J. 489
 Ryder, W. W. 78
 Quill, J. M. 515
 Saylor, A. G. (with supplement) 406
 Sherry, F. J. 176
 Simon, A. 454
 Tebbs, A. G. 216
 Tierney, P. J. 160
 Welch, J. J. 526
- Books**
- Chained Lightning 16
 Inventions and Patents... 34
 Wireless Telegraphist's Pocket Book, by J. A. Fleming 106
 The Telephone and Telephone Exchanges, by J. E. Kingsbury 129
 Development in Radio Telegraphy 143
 Arithmetic of Electricity, by T. O'C. Sloane 160
 Elementary Lessons in Electricity and Magnetism, by S. P. Thompson 216
 Questions and Answers in Telegraphy and Telephony, by H. P. Few 217
 Autographs and Memoirs of the Telegraph, by J. W. Hayes 201
 Essentials of Electricity, by W. H. Timbie 230
 Electrical Trades Directory 239
 Experimental Wireless Stations, by P. E. Edelman... 371
 Engineer in the War, by P. S. Bond 374
 How to Read Telephone Circuit Diagrams, by D. S. Hulfish 371
 Year Book of Wireless Telegraphy and Telephony 385
 Principles of the Telephone, by Jansky and Faber 432
 Mathematics, by George Howe 434
 Electric Motors, by D. P. Moreton 459
 Electrical Tables and Engineering Data, by H. C. Horstman and V. H. Tousley 459
 Metal Storage Transmitters, by D. Murray 449
 First Principles of Electricity, by J. E. Homans..... 484
 Winston's Practical Handbook of Necessary Information 582, 558
- C**
- Census of Electrical Machinery Industry 399
 Census of Electrical Manufactures 494
 Century, All Within a 258
 China, Telegraph Receipts in. 258
 Chinese Telegraphs 459
 Civil War Reminiscences (Merrihew) 9
 Cleveland Aid Society 70
 Commission Telephone Rules in Illinois 529
- Cobwebs on Telegraph Lines 422
 Code, American Diplomatic... 231
 Code, Emergency Telegraph (Jackson's) 155
 Collin's Overland Line to Europe, by Aubrey Fullerton 410
 Colombia, The Telegraph in... 472
 Combined Telegraph and Telephone Operation, by J. F. Skirrow 303
 Commercial Telegraphers' Union 295
 Concentration 517
 Consolidation of New York Dailies 334
 Construction and Maintenance of Outside Plant 394
 Construction and Repair of Telegraph Lines 22, 42
 Conventions, Chicago and St. Louis, Political 302
 Conversation, by J. V. Riddick 260
 Creed & Co. 582
 Cross Talk and Its Cure.... 586
 Crosses Between the Same Pair of Wires—Method of Locating Two, by A. J. Eaves 340
 Cross-Talk and Inductive Disturbances 531
- Cable**
- The Cable...4, 29, 55, 80, 102, 127, 150, 176, 201, 224, 248, 272, 301, 334, 358, 383, 408, 430, 455, 478, 501, 527, 551, 576
 Alaska Cable Repaired.... 127
 Auger, C. V., Promoted.... 301
 Beck, A., Secretary Commercial Cable Co. 576
 Cables, Bug Eats Telegraph Cable Letter Service Resumed 102
 Cable Messages Received by Sound 576
 Cable Operation, New System of (Dixon's) 481
 Cable Steamer "Lord Kelvin," New 430
 Cable Steamer "Minia" Damaged by Fire..... 430
 Censorship in Denmark 4
 Commercial Pacific Cable Station at Shanghai, China* 506
 Deferred Cable Service Resumed by Commercial Cable Co. 127
 Early Cable Across North River 29
 Fanning Island Cable, How It Was Restored 29
 Field, C. W., Personality of Fisher, Frank, Death of... 55
 French Cable Banquet.... 55
 Germany, Cable Communication with 4
 Hamilton, J., Appointed District Manager, Liverpool.. 301
 Irish Rebellion and Atlantic Cables 224
 Kingsford, Herbert, Death of Midway Island an Oasis... 80
 Midway Island, Life on 445
 New Brunswick, New Cables in 272
 Ocean Cables and Trawlers Pacific Cable Board Report 29
 Paulin, R. D. 576
- Refund on Censored Telegrams 29
 Rockaway Cable Station... 430
 South American Cable Monopoly Broken 576
 Spanish Cable Steamer 527
 Tobacco for Midway Islanders 201
 Trans-Caspian Cable 408
 Ward, G. G. 150
 Waterville, Ireland, Cable Station 551
- Canadian Notes.**
- Canadian Notes...4, 30, 55, 81
 103, 127, 150, 177, 201, 225, 249, 272, 302, 334, 359, 383, 408, 430, 455, 478, 527, 452, 577
 Canada to Equip Parks with Radio Service 359
 Canadian Telegraphs 409
 Convention of Canadian Pacific Telegraph Officials... 103
 Day Letter Service in Canada 408
 Dominion Telegraph Company 383
 Grand Trunk Time Service Ottawa, New Office Great North Western 56
 Perry, G. D., Trip to Bermuda 55
 Printing Telegraphs at Ottawa 30
 Quick Telegraph Service... 201
 Recruiting of Operators Forbidden 408
 Shaughnessy, Sir Thomas, Created a Baron 30
 Signal Corps at Camp Borden, Ont. 431
 Smith, A. B., Presentation to Statistics, Canadian Telegraph 272
- D**
- Daylight Extension 327
 Daylight Saving 279, 515
 Direct Stock Wire New York to San Francisco 443
 Does a Telegraph Company Earn its Money 191
 Dolores of Azona, Book by L. A. Dudley 119
 Dot and Dash Club Dinner... 70
 Dot and Dash Club 170
 Dry Cell and How it is Made, by J. H. Schmidt 470
 Duplexes and Quadruplexes on Railroad Wires 361
 Duplex, Handling of Bridge Polar, by C. J. McKee, 259, 294, 326, 341, 363, 390
- E**
- Early American Telegraph Companies 206
 Early Boyd Arrives, by R. M. Telschow 234
 Early Telegraph Companies, by J. C. Vail 229
 Eckert Estate 332
 Edison of the Future 112
 Edison Guest of Ohio Society, New York 59
 Educational—Inductance and Capacity 503
 Antenna Circuits 563
 Wave Length and Time Period 564
 Efficiency, by Tashrak 461

- Efficiency Engineering in the Telegraph Service, 10, 41, 64, 96, 114, 134, 169, 179, 204, 240, 257, 278, 325, 350, 372, 398, 412, 435, 460, 492, 514, 532, 557, 588
- Electrolysis, Causes and Effects of 538
- Electromagnet, by C. R. Underhill 187
- Electromagnets, Alternating-Current 508
- "Erie" Short Cut, by R. M. Telschow 162
- "Erie" Short Cut, by C. R. Langley 205
- "Erie" Short Cut, The, by R. C. Corson 241
- Erie Short Cut—Everyone Can Remember, by J. F. Daymude 241
- Erie Short Cut Again 397
- Estabrook, H. D. 72
- Ethics, Telegraph Code of.... 424
- Exchange of Telegraph and Railroad Services 178
- Editorial
- Alleged Suppression of Patents 13
- Augusta, Ga., Telegraph Offices Burned 148
- Bequests, As to 403
- Cable Telegraphy 475
- Carelessness in Handwriting 124
- Chief Operators 404
- Christmas Thoughts 571
- Code Word "Scotus" 75
- Contributions Desired 197
- Convention of Municipal Electricians 403
- Convention of Telephone Pioneers 475
- Country Life for Employees 197
- Death's Harvest Among Telegraphers 75
- Direction Finder, Government 83
- Edison to Entertain Old Timers 355
- Election Returns, Handling. 499
- Estimating One's Worth ... 355
- Extraordinary Cable Situation 37
- First Operator to Receive by Sound 427
- Fleming Valve Detector Case, Decision in 451
- Fraternal Insurance 331
- First Telegraph Company.. 63
- Government Ownership in Australia 99
- Happy New Year to All... 13
- High Costs of Newspaper Living 547
- How Old is the Telephone.. 547
- Improved Conditions for Operators 245
- Improving this Journal 75
- Increasing Demand for Expert Knowledge 63
- Institute of Radio Engineers 82
- In Town for Work..... 427
- Joint Meetings by Telephone 245
- Keep-out List, End of the, 147
- "Knee Pants" Inventors.... 173
- Landing of Pilgrims, to Commemorate, 476
- Loyalty 379
- Mexico Service, No Operators Needed for, 148
- Military Service, Operators in, 299
- Monthly Statements, to File 197
- Multiplex and Business.... 523
- Narrow-Mindedness 99
- No Limit to Invention..... 123
- Old Timers Reunion 451
- Operators Who Have Made Good 355
- Our Friends Stand by Us... 571
- Permanence of Morse Telegraphy 524
- Porto Rico 99
- Prejudice 475
- Preparedness 75
- Printer Systems, History of, 198
- Printing Telegraphs for Business Correspondence 37
- Printing Telegraphs and Invention 428
- Promotions, Basis of..... 452
- Prosperity of Telegraph Companies 221
- Public Interest in Telephone and Telegraph 148
- Publishers, Trials of, 221
- Radio Lines Down 99
- Railroads to Control Wires 547
- Range, What is a Telegraph 147
- Record of 1915 13
- Retirements 499
- Sanatorium, Telegraphers', 147
- Social Organizations, Benefits of 99
- St. Paul Convention..... 299
- Strike of New York Messengers 523
- Supervising Sending 197
- Telegraph in Business Promotion 523
- Telegraphers in the Military Service 331
- Telegraphic Spirit, New, ... 173
- Telephone, Birthday of, ... 269
- Telephone, The Indispensable, 427
- Texas, Knowledge in, 269
- Transoceanic Wireless Routes 83
- United States Censorship... 37
- War Operators 198
- War Prices for Mental Anguish 331
- Western Union Employees in Good Fortune 571
- What Is the Matter with Texas? 123
- Why Should the Government Infringe Patents 379
- Wireless on Railroads 100
- F**
- Fable, A Modern, 534
- Farmer Mixes Wires 413
- First American Telegraph Company, By J. E. Hall.... 42
- First American Telegraph Company 61
- First Operator to Receive by Sound, By J. C. Vail..... 459
- First Telegraph Line (H. J. Rogers) 230
- First Telegraph Line, By J. C. Vail 277
- Former Telegraphers Who Have Made Good—Lee Mantle 47
- Former Telegraphers Who Have Made Good—C. P. Montgomery 85
- Four to the Wind, By R. M. Telschow 86
- Freeland, J. W., Experiences in the Civil War..... 444
- Frey, E., Director International Cable and Telegraph Union 236
- G**
- Galvanometer Design 293
- Garwood, S. S., Death of, ... 324
- Gasoline, Menace of, By J. B. Dillon 265
- German Operation of Belgian Telegraphs and Telephones.. 413
- Gold and Stock Life Ins. Assn. Annual Meeting 62
- Gold and Stock Day..... 266
- Good Reading, By J. V. Riddick 395
- Government Ownership, Lessons in, 210
- Ground, Locating by a Voltmeter 212
- Ground Wire, Early Conception of, 96
- Grounds and Ground Wires.. 396
- Grounding, General Notes on, By H. M. Wolf 38
- Gulstad Vibrating Relay 255
- H**
- Henry, Prof., Statue to..... 350
- High-Speed Telegraphy, New System 422
- History, Early Western Telegraph 208
- Historical Telegraph Apparatus 156
- Holiday Greetings 12
- How He Got His Trousers... 179
- How Standard Time is Distributed* 362
- HAYES DEPARTMENT**
- Chicago Western Union Office As It Is 541
- Forty Years Later 591
- "Gn D." by Sam. Kelly.... 567
- Grace Before Baseball, 542, 566
- Hayes, Jeff W., on Staff of this Journal 495
- Helena, Mont., Notes 590
- Kind Hearted Lineman.... 543
- Multiplying One's Self 518
- Nobility 543
- On the Wing 502
- Pleiades Club, The, 518, 566, 589
- Retrospection, By J. Fletcher 565
- Speculation 589
- With the Boys in Kansas City 591
- I**
- India, Telegraphs in, 21
- Inductive Interference as a Practical Problem 504
- Index Notation 587
- In Every Name a Story, By Willis H. Jones 485
- In Every Name a Story, By J. Frank Howell 539
- Insulation, Effect of Heat on Rubber 492
- Insulation, Effect of Imperfect, Upon Flow of Current..... 375
- Interference from Transmission Lines 166
- International Transmitter Company 49
- Industrial**
- Industrial 84, 106, 143, 217, 218, 239, 266, 293, 327, 376, 424, 443, 495, 520, 537, 556
- Automobile Radiators, To Avoid Freezing 106
- Cardwell Printing Telegraph System 495

- Dictaphone Transcribing Bureau 106
 Dunduplex Transmitter 377
 DuPont de Nemours & Co., E. I. 152
 Electric Units and Standards 495
 First Aid Exhibit by Train.. 443
 Ground Cone 556
 Hall Switch and Signal Company 327
 Improved Telegraph Apparatus (Bunnell) 495
 International Transmitter Co. 70
 Inter-Phone Catalogue 266
 Keyboard Sending Machine, International Transmitter Co. 70
 Linemans' Climbers 556
 Marconi Wireless, English.. 537
 Morse Tape Recorder, Lamson Electrical Mfg. Co.... 556
 New York Electrical School 143
 Poles, Blasting Holes for... 266
 Railway Electric Mfg. Co... 327
 Railways Labor Saving Device Co. 84
 Reclamation of Land Contest (DuPont Powder Co.) 424
 Removal of Remington Offices 143
 Telephone Companies Extending Facilities 70
 Telephones for Aeroplanes.. 239
 Western Electric Fans 84
 Western Electric Company, Advertising Department.. 327
 Western Electric, Changes in District Managers 556
- J**
- Julesburg Murf, by P. J. Tierney 434
- L**
- Labrador, Visit to Wireless Station in, by S. H. Strudwick 473
 Leased Wire Telegraphers' Banquet 256
 Lehigh Valley Buffalo Terminal Equipment 191
 Letters from Our Agents, 24, 49, 73, 97, 120, 143, 170, 193, 218, 242, 266, 295, 327, 352, 376, 400, 424, 449, 473, 496, 520, 544, 568, 502
 Line Construction 508
 Line Repairing in the Sierras in Winter 305
 Little, E. J., Death of 417
 Lockwood, T. D., Humorist... 184
 Lost Message, A 254
 Love and Telegraph Tolls... 531
- Legal**
- Erroneous Transmission... 178
 Message Tolls, Liable for... 37
 Messengers in North Dakota 12
 Montana Court Procedure.. 256
 Race Messages 57
 Suits for Damages 438
 Ticker Service 57
- M**
- Magnets, Magnetizing 478
 Magnets, Hardening and Tempering Steel for 520
 Magnetism, Induced and Residual 155
- Marconi Company Sues United States for One Million Damages 389
 Marriage by Telephone 310
 Mathematical Rules, Simple... 507
 McClintic, F. M., with this Journal 23
 Messenger Boy, The 307
 Messenger Service, Opportunities in 205
 Messengers, Varied Duties of. 14
 Modern Telegraph Service, by R. M. Telschow 433
 Money Transfer, Damages for Failure to Deliver 274
 Monitorial Dictaphone Observations, by F. D. Murphy... 426
 Morkrum Printing Telegraph System* 17, 35, 65, 89, 111
 Morse Relay as a Telephone Receiver 231
 Morse vs. Continental Codes.. 337
 Mosquito, The—Its History and Habits (C. C. Adams)... 486
 Mutual Investment Credit Union Report 53
- Municipal Electricians**
- Municipal Electricians, 21, 69, 84, 141, 151, 191, 215, 239, 263, 274, 346, 370, 385, 418, 441, 458, 516, 537, 585
 Barrett, J. P., Death of..... 84
 Bosch, A. Retired 585
 Fire Alarm System for Manhattan, New 239
 Gaskill, R. J. 458
 Municipal Electricians, Convention of 385, 418
 National Electrical Code and its Value to the Municipal Electrician, by R. A. Smith 441
 New York, New Fire Alarm System in 421, 458
 Street Signals and Traffic Warnings, by L. S. Brach 516
 Wilmington, Del., New Fire Alarm System 537
- N**
- News, Gathering the (From New York Herald) 493
 Newspaper "Beats" 579
 Newspapers, Unfair 360
 New York Telegraphers' Aid Society 45, 170, 424, 473
 New York Telegraphers' Aid Society, Annual Entertainment 497
 New York Telegraphers' Aid Society, Annual Report ... 194
 New York Telegraphers, Retired 296
- O**
- Obituary 21, 48, 58, 130, 152, 178, 215, 226, 263, 274, 324, 335, 370, 385, 424, 442, 457, 489, 520, 537, 554, 582
 Observation and Its Relation to the Repeater Man, by A. H. Frederick 484
 Oddities, Telegraph 11, 60, 133, 206, 293, 306, 411, 580
 "Old Farmer" Lawton on the Move 241
 Old Timer, The, by W. H. Jones 135
 Old Timer and Old "195," The, by W. H. Jones 211
 Old Time Telegraphers and Historical Association, 364, 490, 539
- Reunion 466
 Ohm's Law, by J. B. Dillon... 205
 Ohm's Law, by J. L. Edwards 251
 O'Neal, W. C., Some War Experiences as Told by His Daughter 515
 Ownership Statement, April 1, 1916 193
 Outing, Philadelphia Postal... 328
- P**
- Paper, Scarcity of in England 141
 Paper and Engravings, Illegal Increase in Prices of..... 414
 Philadelphia Electrical Aid Society 58
 Phillips Code, Important Additions to 133
 Photo Engraving Combination Indicted, Members of 393
 Poles, Strength of Wooden... 4
 Poles in Connecticut 159
 Poles, Live Timber for 233
 Poles, Reinforcing Wooden.. 374
 Poles, Concrete 509
 Pole Holes, Blasting 514
 Porter, E. P., Death of 371
 Porto Rico, Telegraph and Telephone in* 110
 Postal of Texas Conference at Dallas 407
 Printer Systems, by H. A. Emmons 209
 Printing Telegraph (D. Murray Booklet) 153
 Printing Telegraphs 531
 Producing Electricity, Different Methods of 229
 Promotion of Employees..... 530
 Prudence, by J. V. Riddick... 9
 Publishers, Unjust Law Against 188
- Personal**
- Personal 2, 26, 52, 100, 124, 148, 199, 222, 246, 270, 300, 332, 356, 380, 404, 428, 452, 500, 524, 548, 572
 Aenlle, F. 356
 Arnar, O. B. 524
 Burton, W. C. 332
 Carroll, D. A. 356
 Castilla, Antonio 332
 Edison, T. A. 524
 Greeley, Gen. E. S. 101, 149, 405
 Matchette, F. J. 270
 McKibben, C. W., Headquarters Changed 356
 McNairn, E. B. 300
 O'Ryan, Genl. J. F. 358
 Pease, Rt. Hon. Joseph.... 149
 Pupin, Dr. M. I. 101
 Reber, Lieut. Col. Samuel... 149
 Rodgers, F. J. 300
 Tesla, N. 148
- Postal Telegraph and Cable Company**
- Postal Executive Office Notes ... 3, 27, 53, 76, 101, 125, 149, 174, 199, 223, 247, 271, 301, 333, 357, 380, 405, 429, 453, 476, 500, 525, 548, 573
 Adams, C. C., President of Lawrence 301
 Augusta Fire 271
 Butterfield, E. S., Death of 27
 California Society of New York 125
 Conference in New York... 548
 Cooksey, E. C., Park Commissioner, Roanoke, Va... 223

- Daviet, W. C., President Louisville Rotary Club... 223
 First Postal Underground Wires, by C. F. Thompson 181
 Funeral, Impressive, of a Messenger Boy 27
 Libelous Film Picture..... 125
 License Fees in Portland... 3
 Lines on Rights of Way.... 174
 Lyle, W., Member Board of Trustees Natchez Hospital 223
 Mackay, C. H., Contribution 149
 Mackay, C. H., Election Entertainment 524
 Mackay, C. H., Knight Commander 301
 Mackay Companies Annual Meeting 107
 Mackay Stock Offered to Employees 125
 Magnetic Club Spring Dinner 227
 Magnetic Club Fall Dinner. 549
 Magnetic Club, New Officers 27
 Magnetic Club, List of Presidents 76
 Managers Appointed 53
 Military Training for..... 223
 Night Letters, Flood of.... 200
 Poles, Removal of, in Portland, Ore. 3
 Preparedness, A Telegraph Man on 247
 Redistricting Western Territory 199
 Right of Way Man's Experience 548
 Salesmanship 525
 Telephone Service, Long Distance 3
 Telephone Service, Public.. 333
 Underground Conduits..... 3
 Washington Office, New, 200, *252
- Q**
 Quadruplex, How to Balance a 51
 Quadruplex and Duplex Instruments, Testing, by M. M. Davis 233
 Questions to be Answered.. 12, 48, 66, 95, 118, 131, 153, 192, 203, 235, 280, 330, 374, 423, 436, 465, 494, 510, 540, 564, 587
- R**
 Relation of Conductivity to Insulation Resistance 390
 Reminiscences (see Civil War) 9
 Reminiscences, Telegraph, by F. A. Stumm 434
 Reminiscences, Some Telegraph, by J. L. Edwards.... 308
 Repeater, Automatic Telegraph (McKeon) 585
 Repeaters and Relays (Lockwood) 88
 Repeater, The J-C* 540
 Resurrection, by J. W. Hayes. 496
 Romance of a Telegrapher, by B. C. Wilkins 347
 Rotary Clubs, Convention of.. 375
 Russia, No Foreign Operators 528
 Reuter Agency, The..... 539
- Radio Telegraphy**
 Radio Telegraphy, 6, 31, 57, 82, 104, 129, 152, 177, 202, 226, 250, 273, 302, 335, 359, 384, 409, 432, 457, 480, 503, 528, 552, 577
 Amateur Wireless Association 6
- Annual Report Marconi Company 157
 Bottomley, Mr., on Wireless Development 503
 Cable vs. Wireless 578
 Cape May, Wireless Station at 31
 Cape Race Station 105
 Change in Title of Naval Radio Service 432
 Charts, Radio Communication 129
 Contract for Equipment for Inland Navigation Company 32
 Crystal Receivers 480
 Detector Case, Decision in Favor of Marconi Company 457
 "Deutschland," Wireless on the 360
 Development of Radio Telegraphy (pamphlet) 143
 Direction Finder at North Truro 105
 Dutch Government Wireless to New Guinea 152
 Early Wireless, by L. Derrick 113
 Electrical Oscillations—How They Are Produced*.... 109
 Emergency Lights on Passenger Boats 152
 English Wireless Dividends 31
 Federal Telegraph Company's Report 335
 Herald Station Under Censorship 503
 Hudson River Boats, Wireless on 251
 Injunction Against American Hawaiian Steamship Co. 31
 Institute of Radio Engineers, Officers Elected 32
 Insurance of Marconi Employees 177
 Japan, Wireless to 6
 Key Manipulation in Wireless Telegraphy, by Carl Dreher 365
 Keys Used in Radio Telegraphy 57
 Leary, J. J., from Solomon Island 273
 Marconi Christmas Entertainment 6
 Marconi Employees in Military Service 335
 Marconi Operators, Insurance for 384
 Marconi Stations and Operators at Sea 360
 Marriott, R. H., Appointment Money Order by Wireless.. 6
 Music by Wireless, Demonstration by Dr. De Forest 517
 National Amateur Wireless Association 57
 Navassa Island, Station at.. 384
 Navy, New Wireless Stations for 57
 One Thousand-foot Towers. 226
 Pan American Wireless.... 82
 Police Department, N. Y., Wireless 360
 Polynesia, Wireless to 152
 Pope's Blessing on Wireless 6
 Principles of Wireless Telegraphy* 46
 President Wilson and Amateur Wireless Organization 129
- Quick Work in Making Radio Exhibit 6
 Radio Service, U. S. Naval.. 350
 School in New York, Marconi Wireless 105
 Spark Gap, The 265
 Speed Records, Some Wireless 578
 Suit Dismissed, Against Atlantic Communication Co. 32
 Tesla vs. Marconi Company 384
 Tests Between Spain and America 57
 Tests with Japan Successful 409
 Time Signals, Lag in..... 335
 Torpedoes, Wireless Control of 274
 Tuning in Wireless Telegraphy 509
 Two or More Messages from One Aerial 360
 United States-Japan Wireless Service 553
 Weather Reports from Arlington Station 152
 Wireless for Power Transmission Company 578
 Wireless Operator's Future, The, by W. A. Winterbottom 15
 Wireless Beginners, Information for 462
 Wireless on "Espagne" Scaled 57
 Wireless for New York Police 251
 Wireless Message Heard 9,000 Miles Away 273
- Railroad.**
 The Railroad, 21, 45, 69, 93, 117, 141, 165, 191, 215, 239, 263, 283, 323, 345, 369, 393, 417, 441, 465, 489, 513, 537, 561, 585
 Association of Railway Telegraph Superintendents, Meetings of 284
 Association of Railway Telegraph Superintendents, Officers of 393
 Bedlow, C. C., Appointment of 93
 Bradley, C. W., Dinner to... 465
 Censoring Telegrams on Railroads 203
 Chace, H. C., Appointment. 585
 Chenery, s, Mrs., Narrow Escape 165
 Connelly, W. L., Appointment as Secretary 369
 Convention of Association of Railway Telegraph Superintendents 313
 Davis, W. T., Superintendent El Paso and Southwestern Ry. 271
 Dispatching Circuits, New Signaling Device for (Wray) 346
 Eastern Division Association of Railway Telegraph Superintendents, Meeting of 561
 Flood Lighting Railroad Yards* 562
 Forristall, Death of S. A. D. 45
 Friendship Circle 93, 141
 Full Use of Wires 345
 Guiding Trains by Telephone* 447

Jones, J. A., Appointment..	585
Keenan, E. C., Appointment	283
Lehigh Valley's New Buffalo Offices	283
Lightning and High Tension Circuits, Protection Against	349
Mail Bag Catcher	118
Meeting of Western Division Association of Railway Telegraph Superintendents	165
Morse Operators on Railroads	441
New York Central Booklet.	165
New York Central Telegraph Superintendents, Meeting of	513
Old Telegrams (E. A. Smith)	93
Paterson, Why He Got Off at	166
Pennsylvania, Telephone Dispatching on	69
Railroaders and Telegraphers' Aid Society	21
Railroad Right of Way	443
Railway Signal Association	465
Railway Telegraph and Telephone Statistics.....	323
Railway Telegraph and Telephone Appliance Association	327
Rankine, J. C., Supt. Telegraph Great Northern ...	441
Rapid Rise of W. M. Jeffers, by H. V. Hilliker	345
Rhoads, C. S., Long Service	93
Rhoads, Jr., C. S., Appointment	417
Running Trains by Smoke..	263
St. Paul's Electric System..	417
Selector in Train Dispatching	513
Selective Telephone Train Dispatching	370
Signal Equipment, Operating Model of (Western Electric Co.)	513
Statistics of Telephone and Telegraph Train Dispatching	291
Switchboards, Telephone, on Railroads (Clapp)	69
Telegrams and Mailgrams on Canadian Pacific	117
Telephone Experiences on Railroads, Early, by C. S. Rhoads	117
Telephone on Railroads, Use of	69
Transposition Systems	585
Transposition Systems, The Problem of, by M. H. Clapp	287
Train Dispatchers' Association, New Officers	346
Vandalia, Telephone Dispatching on	165
Wireless on Railroads.....	293
Wireless on Lackawanna...	573
Wireless Experiments on Union Pacific	369
Why Railroad Operators Desert Key	369

S

Sanatorium for Telegraphers, by J. N. Johnson.....	156
San Francisco Telegraph Tournament Account by Smith and Bartley.....	137

"Scotus," The Code Word....	16
Serial Building Loan and Savings Institution	375
Serial Building Loan and Savings Institution, Annual Meeting	73
Serial Building Loan and Savings Institution, Insurance vs. Investment in.....	582
Shunt, New Universal, by H. W. Brown*	556
Sidelights on Success, by H. J. Pettengill	386
Soldiers, Maimed, Electromechanical Aids for.....	86
Soldiers' Votes, Long Message for	528
Southern Pacific Private Telegraph System	120
Speedwell Iron Works.....	304
Speedwell Property to Become a Park	557
Statement of Ownership.....	491
Student's Creed—I Will.....	275
Success, by J. E. Burke.....	253
Successful Telegraphers, by R. Spillane	469
Suits Against Telegraph Companies	231
Swift & Co., Chicago, Telegraph System of.....	136

T

Telegraph Beat the Horses...	210
Telegraph Code of Ethics....	399
Telegraph Legislation in the United States of America..	483
Telegraph Order, Interesting Old time*	366
Telegraph Range, What Is a Stumm Reply)	179
Telegraph and Telephone Life Insurance Association, Annual Meeting	142
Telegraphy in Shorthand.....	580
Thompson, Prof. S. P., Death of	324
Thrift—The Nation's Future Strength, By J. Frank Howell	119
Time Advanced, Legal.....	248
Time Telegraphy	517
Transmitting Device, Improved (Pierce)	108
Tree, J. B., Death of.....	442
Troubles of a Trouble Man, by O. C. Greene	228
Typesetting Typewriter	501

Telephone

The Telephone.. 5, 30, 56, 81, 127, 150, 177, 202, 225, 249, 273, 302, 334, 359, 384, 409, 431, 456, 479, 502, 527, 532, 577	
A. I. E. E. Meeting by Telephone	255
American Telephone and Telegraph Company, Report of, for 1915.....	128
American Telephone and Telegraph Company Annual Meeting	150
Annual Report of Bell System	154
Anchor, Telephone Cables Caught by	151
Banquets by Telephone by Telephone Societies	256
Bell Reports..... 57, 202, 273, 431	
Bell Stock for Employees	128
Bethell, F. H., 195 Broadway Corporation	359

Bipolar Telephone Receiver,* by E. B. Tuttle.....	36
Birth of Telephone, Celebrating the	151
Bond Issue Approved.....	577
Bonds, Telephone, Sold....	56
Boston Plant Chapter, 5, 249, 273	
Boston Telephone Rifle Club	127
Cable to Nantucket.....	384
Canadian Coast-to-Coast Telephone	151
Canal Zone, Telephone Construction in	456
Carty, J. J., Guest of Reception at Boston	225
Carty, J. J., Japanese Honors for	56
Changes of Titles.....	479
Chicago Telephones	81
Chicago Automatic Telephone System	150, 479
Correct Telephone Habits..	530
Cuban Telephone Company.	503
Dinner to Wireless Telephone Engineers	30
Dye Shortage Felt in Telephone Industry	249
Havana, Long Distance Telephone to	225
Help, Using Telephone in Sudden Calls for.....	577
Hibbard, A. S.....	359
Iceland Telephones in.....	528
Independent Telephone Association, Convention of..	577
Japanese Telephone Service.	56
Light Station Remote Control by Telephone	81
Lockwood, T. D., Office in New York	359
London - Liverpool Underground Cable	202
Maracaibo, Venezuela, Telephone System	359
Medals Awarded to Mr. Vail and Mr. Carty by Franklin Institute	250
Montreal Telegraph Company Report	56
Montreal to Vancouver by Telephone	127
New Brunswick Telephone Company	273
New England Telephone Report	104
New Orleans, New Exchange	56
New York Telephone Report	104
New York Telephone Directory	127
New York to Seattle	81
Patterson's Joke, Mr.....	480
Plattsburg Transcontinental Demonstration	302
Pope, Henry W., Death of..	128
Portable Telephone, Light..	202
Private Branch Exchange, Large	202
Repeating Coils, Telephone, by E. B. Tuttle	336
Southern Bell Report....	127
Southwestern Tel. & Tel. Co. Report	127
Stock and Bonds, New Issue of, by A. T. & T. Co.....	552
Stock Subscription Plan....	240
Sunny, B. E., Dinner to...	254
Telegrams by Telephone in England	384

- Telephone, The*, by J. F. Skirrow 158
- Telephone Chief Operators' and Monitors' Equipment 232
- Telephones for Canary Islands 528
- Telephone Statistics of Canada 249
- Telephone Progress Commemorated 151
- Telephones on Country Roads 150
- Is the Telephone a New or an Old Invention? by Samuel Wein 558
- Telephone, The—Its Use and Service 277
- Telephone in Japan 432
- Telephone Pioneers, Convention of 432, 502, 533
- Telephone in War Surgery 104
- Telephone Wire and Stations Time System for Telephone Operating Rooms, by J. S. Miller* 276
- United States Independent Telephone Association 5
- Mr. Vail's Advice to Graduates 334
- Mr. Vail's Great Mistake 527
- Mr. Vail in Guatemala 150
- Von Schlegell, A., Appointment 127
- Wire and Stations July 31 431
- Wires of Bell System, Miles of 273
- Wireless Telephone Communication with Warships 225
- U**
- Union Pacific and Southern Pacific Private Telegraph Systems 120
- United Press Service in South America 417
- United Press Staff in 1887* 7
- Uruguay, Telephone-Telegraph-Post Office Monopoly 124
- Useful Kink, A. 532
- V**
- Vacations, New Idea in 387
- Variable Self and Mutual Inductor 436
- Varley Bridge Temperature Coefficient of, by J. W. Snyder 471
- Varley Loop Test* 264
- Varley Loop Test, Modification of, by H. V. Lewis 397
- Voltmeter Testing, by W. W. Boes 555
- W**
- Wall Street Notes, 23, 47, 71, 85, 230, 400, 443 370
- Ward, H. H., Death of 370
- War Tax on Telegrams Abolished 452
- Watchman's Central Station Signal* 280
- Western Electric Developments in 1915 23
- Western Electric Year Book 49
- Western Electric Executive Offices, New 293
- Westinghouse, G., Memorial to Where Do You Stand (Address by Dodge) 159
- Whispering Gallery, The World 279
- Why Operator Hamm Reported Late, by R. M. Telschow 388
- Winks Telegraphing by Eye, by F. A. Stumm 40
- Wire, Tying and Splicing Copper, by W. H. Collins 207
- Wire Making an Old Art 241
- Wire, Copper 255
- Wire Testing an Exact Science, by R. M. Telschow 288
- Wiring Systems, Return 306
- Wire Troubles, Some Causes of, by An Old Time Wire Chief 351
- Work Easy, Making Your, by C. J. McKee 446
- Worl, J. N., Serious Illness of, 414, 438
- Western Union**
- Western Union Executive Office Notes, 3, 28, 53, 77, 125, 149, 174, 200, 223, 247, 271, 301, 333, 357, 380, 405, 429, 453, 476, 501, 525, 550, 573
- Annual Meeting and Election 174
- Annual Report 180
- Anything Can Be Sent by Telegraph 200
- Baker, W. H., Retirement of, with portrait supplement* 574
- Benefit Fund, Employees' 248
- Bogan, T. S., Manager, Memphis 550
- Bonus for Western Union Employees 573
- Boston Office, New* 182
- Boston Educational Society Outing 393
- Bowling Association, Western Union 248, 453
- Bowling Contest by Telegraph 150
- Brewer, Retirement of 200
- Brewer, Mr., Dinner to 223
- Brooks, Belvidere, Death of 77
- Brooks, B., Funeral of 102
- Burleigh, A. F., Appointed Secretary* 574
- Butler, G. D., Retirement 28
- Carroll, T. W., Appointed General Manager 357
- Censorship to Mexico 150
- Cleveland Office, New 406
- Commercial Association New York, Dinner 78
- Commercial Development Meetings at Cincinnati 454
- Conference of Auditors 3
- Conference, District Commercial Superintendents, New York 28
- Conference at Salt Lake City 102
- Conference at Denver 126
- Conference at New York 126
- Conference at Milwaukee 149
- Conference at Buffalo 172
- Conference at Meridian, Miss. 175
- Conference at New York, Group 1 175
- Conference at Kansas City 200
- Conference at Watertown 201
- Conference at Utica 201
- Conference at Halifax 224
- Conference of Managers at Franklin, Pa. 382
- Cook, M. T., General Manager Pacific Division* 79
- Cotton Exchange Staff Banquet 79
- Cowan, A. B., General Manager, Denver 550
- Cowan, A. B., Farewell Dinner to* 581
- Development Meetings at Cleveland, Buffalo and Cedar Rapids 477
- Dividends 301, 429
- Earnings Reports, 54, 200, 357, 477
- Edwards, J. P., Appointment 357
- E. M. F. Society Organized in Denver 4
- Fearons, G. H., Retired 501
- Fire Drill in Real Use 78
- Gaunt, C. H., Luncheon 77
- Gaunt, C. H., General Manager Western Division* 79
- General Managerships, Changes in—Ryder, Gaunt, Cook 53
- Jarvis, W. E., Assistant Manager, Memphis 550
- Lloyd, W. J., Retirement of 551
- London Western Union Men Killed in War 406
- Louisville Office, New 453
- McGrath, A. R., District Commercial Superintendent, Chicago 575
- McRobie, J., Retired 301
- Main Line Sounders 149
- Medal for Heroism, to W. D. Bard 78
- Miller, I. N., Jr., Superintendent, Seattle, Wash. 575
- Money Transfers for Soldiers 357
- Morse Electric Club, Annual Meeting 29
- Morse Club Dinner Postponed 102
- Morse Electric Club Dinner 201
- Morse Electric Club Outing 377
- Mountain Division, Change in General Manager 550
- Move Into New 195 Broadway 126
- Murphy, C. H., Operated on 54
- Nathan, J. F., Appointed Commercial General Superintendent 407
- National Distribution Service Discontinued 406
- New York Western Union Educational Society, Dinner 144
- New Receiving Office at 195 Broadway 429
- Rotary Club 200
- Ryder, W. W., Assistant to Vice-president* 78
- Saylor A. G., Retirement of 357, 358
- Schmults, J. William 271
- Skelton, D., Dinner to 102
- South America, Western Union to Enter 525
- Sprague, C., Appointed Assistant Secretary 53
- Sprague, Carleton, Death of 550
- Statistics, Telegraph 501
- Statue of Electricity 405
- Superintendents Appointed 405
- Telephone and Telegraph Building Annex 477
- Tires for Messengers at Cost, Bicycle 126
- Vice-Presidents of Western Union Telegraph Company (with pictures) 482
- Walker-Lispnard Building To Be Enlarged 272
- Western Offices, Improving 54
- Western Union Educational Society of New York 267

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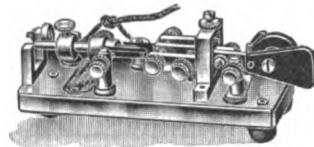
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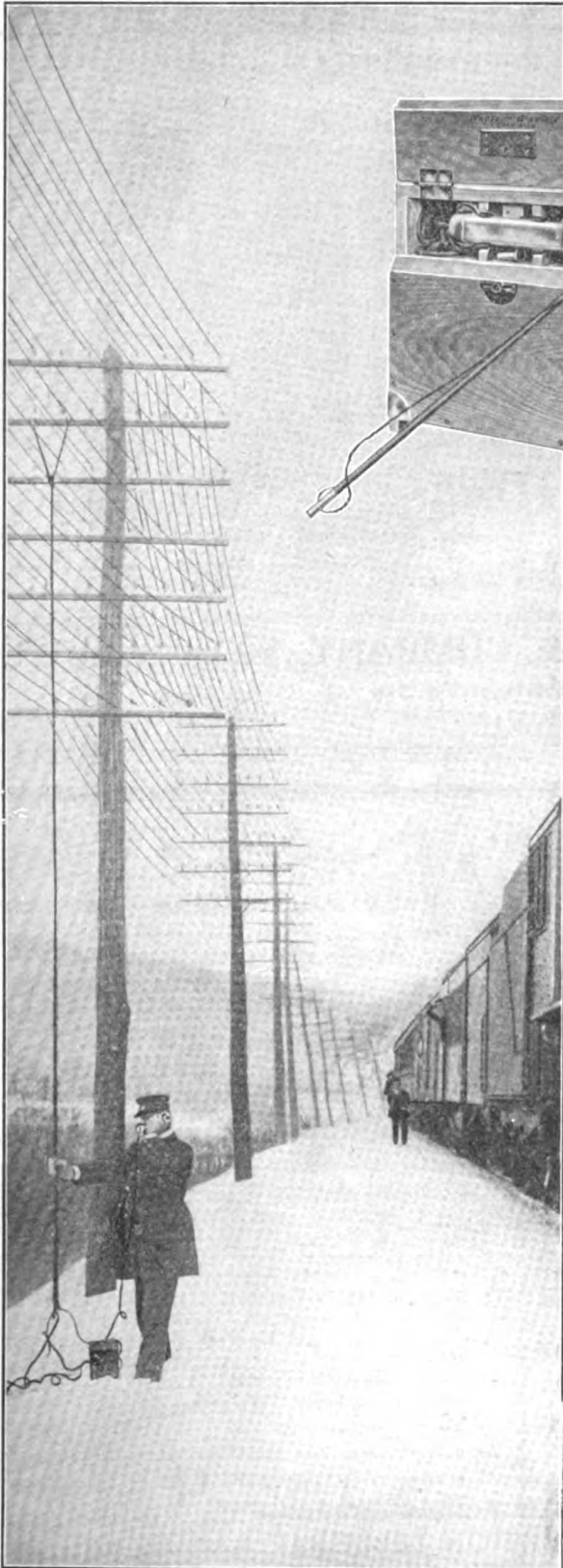
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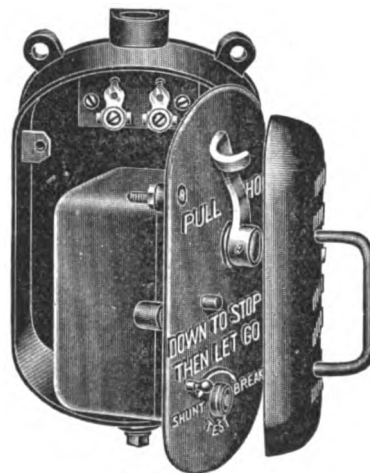
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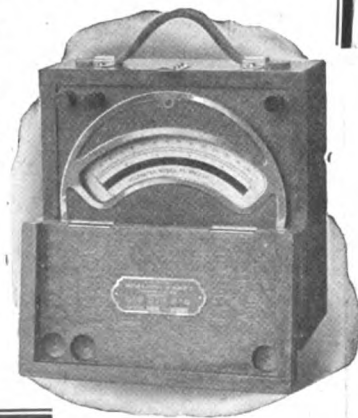
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Telegraph and Telephone Age

No. 1.

NEW YORK, JANUARY 1, 1916.

Thirty-fourth Year.

CONTENTS.

Adjustment of Telegraph Apparatus (<i>Continued</i>).....	1
Telegraph and Telephone Patents. Stock Quotations. Dividends. Personal.....	2
Postal Executive Office Notes. Western Union Executive Office Notes.....	3
"The E. M. F. Society Organized in Denver." The Cable. Canadian Notes. Strength of Wooden Poles.....	4
The Telephone. United States Independent Telephone Association. Review of Principal Telephone Articles.....	5
Radio Telegraphy. Amateur Wireless Association. Quick Work.....	6
The United Press Staff in 1887.....	7
Efficiency Engineering in the Telegraph Service (<i>Continued</i>).....	9
Prudence. By J. V. Riddick. Reminiscences of the Civil War.....	10
E. A. Chase, Former Writer of Telegraph Sketches. Telegraph Oddities. Books.....	11
Questions to be Answered. Messengers in North Dakota. Holiday Greetings Acknowledgment.....	12
Happy New Year to All. Alleged Suppression of Patents. The Record of 1915.....	13
Varied Duties of Messengers.....	14
The Wireless Operators' Future. By W. A. Winterbottom.....	15
New Book. The Code Word "Scotus.".....	16
The Morkrum Printing Telegraph System. (<i>Continued</i>).....	17
The Railroad. Association of Railway Telegraph Superintendents. Municipal Electricians. Obituary.....	21
Construction and Repair of Telegraph Lines. (<i>Continued</i>).....	22
The Associated Press. Wall Street Gossip. F. M. McClintic. Western Electric Developments in 1915. A New Feature.....	23
Letters from our Agents.....	24

Adjustment of Telegraph Apparatus.

(Continued from page 562, December 10, 1915)

In the previous issue the importance of proper adjustment of relays in order to get the best service out of wires was pointed out. The relay, however, is only a link in the chain. It is of no practical use—in fact, it is a waste of time, and cause of trouble and delay—to concentrate all attention on one piece of apparatus and neglect the other instruments associated with it; all must be kept up to standard condition. The sounder must be adjusted properly to work in harmony with the relay, and to the sounder we will now give our attention.

When a sounder does not give out a loud enough noise to suit an operator, he almost invariably proceeds to give the lever a wider play, as if that were the only remedy. As a matter of fact, that process in itself seldom brings about the desired results unless the lever at the time happens to be screwed down abnormally close. The important thing to know is that if the lever is given a play which will permit the armature to move away from the magnet cores beyond a normal distance, it is difficult for the magnet to get control of it again. The reason for this is that a magnet loses its power to attract the armature in a degree directly proportional to the square of the distance separating them; or, in other words, to the square of the air gap. For example: If two magnets similarly constructed in all respects be supplied with currents of equal strength, and the air gap between the cores and the armature of one equals the thickness of a cardboard, while two cards could occupy the gap of the second magnet, the former

would be practically four times as strong as the latter. It is plain, therefore, that to give the sounder lever too great a play will so weaken the pull on the armature when in its "open" position that when the local circuit is again closed the lever moves so slowly at first that it hardly has time to cross over the space before the current is again broken. The result is that a signal is partially broken up before completion.

The lesson to be learned from this is that the play given to an armature lever must never be so great that the magnet cannot bring it back promptly within the time allotted to complete a signal. This, in turn, suggests that the amount of play should be decreased in proportion to the speed with which the signals are increased. The proper method to increase the volume of sound is as follows:

Place a sheet of paper between the armature and the poles of the sounder magnet and then lower the armature till there is just space enough to move the paper back and forth without catching. This permits the magnet to exert its maximum strength on the lever and the position should seldom be altered. Whatever changes that are necessary during the process of adjusting should be effected by means of the spring, the upper thumb-screw, and the screws which regulate the trunnion. The adjustment of the trunnion screws is a matter too generally overlooked. It is there that the pitch, or quality, of the sound is regulated. The pivot must not bind too tightly nor be too loose.

What is most important to the operator, however, is to be able to quickly determine the source of the disturbance and then apply the correct remedy.

When signals do not reach the operator in the particular style that suits his fancy he usually attempts to remedy the fault by giving the sounder lever a greater or a lesser play. If the trouble happens to lie in an improper adjustment of that part of the apparatus he may possibly succeed in helping matters, but the fact is that indistinct signals may be due to any one of a great variety of causes which he may never suspect.

For the purpose of illustration, let us again take the case of an ordinary single line relay and sounder and assume that despite a careful adjustment of the relay and sounder magnets after the manner suggested the signals continue to "drop out" at times.

Now, the first thing to determine is whether the fault lies in the relay or in the sounder. Such disturbances are usually due to a loose or improper connection somewhere in the local circuit, but not always. Naturally, the first move made towards locating the trouble should be to examine all binding posts, and operators in general would save themselves many annoyances if they would acquire the habit of doing this whenever they sit down to

a different set of instruments. If the binding post connections prove to be secure, open the key and dot or "write" with the finger on the relay armature or lever, using the latter as a key. If the signals then respond firmly and distinctly, the local circuit is not at fault and attention should be directed to the relay.

(To be Continued.)

Telegraph and Telephone Patents.

ISSUED DECEMBER 7, 1915.

1,162,765. Holder for Crystal Detectors. To J. J. Ghegan, East Orange, N. J.

1,162,830. System of Signaling by Wireless Telegraphy under the Quenched-Spark Method. To G. Von Arco and A. Meisner, Berlin, Germany.

1,162,899. Telephone Indicator. To H. E. Beane, Bowling Green, Ky.

1,163,201. Mechanical Sounder for Telegraph Systems. To P. P. Banholzer, Philadelphia, Pa.

1,163,326. Telephone Attachment. To D. Y. Donaldson, Denver, Col.

1,163,390. Automatic Telephony. To W. M. Bruce, jr., Springfield, Ohio.

ISSUED DECEMBER 14, 1915.

1,163,834. Primary Battery. To H. E. R. Little, New York.

1,163,852. Telephone System. To R. L. Quass, New York.

1,163,883. Selective Signaling Device. To J. P. C. Boswau, New York.

1,163,896. Signaling System, To H. L. Darrah, Chatham, N. J.

1,163,899 and 1,163,900. Telephone System. To A. H. Dyson, Montclair, N. J.

1,164,273. Relay and Repeater. To W. Finn, Bloomfield, N. J.

1,164,274. Telegraph Repeater. To W. Finn, Bloomfield, N. J.

1,164,407. Telephone Relay. To J. Schiessler, Baden, near Vienna, Austria-Hungary.

1,164,479. Automatic Telephone-Exchange System. To G. Deakin, Berkeley, Cal.

1,164,563. Guard for Cords or Wires of Telephone Sets. To O. Yates, sr., Portland, Oregon.

Stock Quotations.

Following are the New York closing quotations of telegraph and telephone stocks on December 28:

American Telephone and Telegraph Co ..	129
Mackay Companies	79
Mackay Companies, preferred	65-66½
Marconi Wireless Tel. Co. of Am. (Par value, \$5.00)	3¾
Western Union Telegraph Co.....	88½

[This publication is prepared to purchase for its friends one or more shares of Western Union, Mackay, Marconi or any other stocks, either outright or on the installment plan. Remit \$10.00 per share as the initial payment if purchase is to be made on the installment plan. The stock will then be purchased at the market price and the balance due on the stock can be paid off at the rate of \$5.00 per

month or in any other sum to suit the convenience of purchaser. In the meantime 6 per cent interest will be charged for the balance due on the stock. The purchaser, however, will have the benefit of the dividends, which, in many cases, will more than pay the interest charges. As soon as the stock is paid for, it will be registered in the purchaser's name and delivered to him. The commission charges on the purchase of stock is \$1.00 on transactions covering from one to eight shares. For eight or more shares the commission charge is 12½ cents per share. In remitting to cover purchases of stock, name the price at which purchases are to be made.]

Dividends.

The American Telephone and Telegraph Company will pay a dividend of two dollars per share on January 15.

The Central & South American Telegraph Company has declared an extra dividend of three per cent together with the usual quarterly dividend of one and one half per cent, payable January 10. The report of the company for the quarter ending December 31 shows a gain in net earnings of \$147,000 over the same period of 1914.

PERSONAL.

MR. J. E. WRIGHT, of Pittsburg, Pa., inventor of the Wright printing telegraph system and a well-known old-time telegrapher, spent the holidays in New York.

MR. ANDREW CARNEGIE has leased the home of the late Anson Phelps Stokes of Noroton, Conn., for 1916 and will spend the coming summer there instead of going to Skibo Castle, Scotland.

W. R. BARNET, assistant general passenger agent of the New York Central Railroad, a former telegrapher, has been appointed assistant general sales manager of the American Sugar Company.

MISS HELEN M. WINSLOW, the well-known novelist, poetess and newspaper writer, started her career as an operator for the Western Union Telegraph Company at Swanton, Vt., thirty-eight years ago.

PROF. M. I. PUPIN, of Columbia University, New York, and well known in electrical circles through his researches and inventions in telephony and wireless, was elected president of the New York Academy of Sciences, December 20.

MR. R. E. MULCAHY, of San Francisco, Cal., an old-time railroad and commercial telegrapher, now and for many years past a member of the firm of E. F. Hutton and Company, bankers and brokers, is in New York on his annual business trip.

MR. W. H. FLANN, superintendent of telegraph for the New York Transit Company, Northern Pipe Line Company, the Buckeye Pipe Company and the Indiana Pipe Line Company, with headquarters at Oil City, Pa., was a recent New York visitor.

POSTAL TELEGRAPH-CABLE CO.**EXECUTIVE OFFICES.**

OFFICIALS BUSY.—Those residing outside of the city of New York are always anxious to hear from headquarters and the movements of the executive officials. At this season of the year the officials are usually found at their desks. Mr. Edward Reynolds, vice-president and general manager of the company, is the directing spirit and is ably assisted by vice-presidents Charles C. Adams, Charles P. Bruch, and W. I. Capen, they having jurisdiction over different departments that constitute the make-up of the company.

MR. C. C. ADAMS, vice-president, is in Philadelphia on company business.

MR. W. I. CAPEN, vice-president, on December 21 returned from an inspection trip through the eastern part of the Southern Division, after an absence of three weeks. On January 3 he will start on a similar trip through Texas, to be gone about a month.

MR. H. SCRIVENS, superintendent, Pittsburgh, Pa., and his family, spent the holidays in New York.

FRED A. BUECKING, aged forty-two years, manager for the Postal Telegraph-Cable Company, Missoula, Mont., died in that city on December 22.

UNDERGROUND CONDUITS.—Judge George H. Criswell, of the Venango (Pa.) County Court, has decided, in the case of Oil City vs. the Postal Telegraph-Cable Company, that a municipality cannot compel one corporation to put its wires in the conduit of another corporation.

LONG DISTANCE TELEPHONE SERVICE.—This company has established long distance telephone service between Chicago, Peoria, Joliet, La Salle, Morris and Ottawa, Ill., and between Chicago, Indianapolis, Ind., Dayton, Hamilton, Cincinnati, Ohio, Columbus and Steubenville, Ohio, and Pittsburgh, Pa.

TELEGRAPH LICENSE FEES IN PORTLAND.—Judge Wolverton, in the United States district court at Portland, Ore., has decided that the city has the right to exact a license fee, from telegraph companies doing an interstate business. Suit was brought by the Postal Telegraph-Cable Company against the city of Portland, to restrain the city officials from collecting a quarterly license fee of \$75.

IN FAVOR OF THE POSTAL.—Judge W. L. Putnam, of the United States Court at Portland, Ore., has decided in favor of the Postal Telegraph-Cable Company, in the suit brought by the company against the city of Portland, to restrain the city from enforcing an order, requiring the company to remove its poles on a certain street. The judge decides that the state has no jurisdiction over the poles, beyond its police authority, and that the company is not violating any contract or agreement with the city, for the reason that none exists.

WESTERN UNION TELEGRAPH CO.**EXECUTIVE OFFICES.**

MR. A. G. SAYLOR, general manager, Eastern Division, New York, spent a few days recently on a business trip in the western part of New York state. He was accompanied by Mr. Allan Woodle, district commercial superintendent, Buffalo, N. Y., in the district of the latter.

MR. G. M. YORKE, general superintendent of plant, New York, spent Christmas with his mother in Lowell, Mass.

MR. W. L. JACOBY, president of the American District Telegraph Company, New York, returned from a business trip to Chicago recently, and for over a week was confined to his home with gripe.

MR. C. A. CARROLL, formerly manager at Mar-seilles, Ill., but lately of Indianapolis, Ind., has been appointed manager of the Cherokee, Iowa, office of this company.

MR. N. H. RANDALL, of Spokane, Wash., has been appointed manager of the Western Union office at Bonner's Ferry, Idaho.

MR. A. A. PATTERSON, manager at Bay City, Mich., told "The Story of the Telegraph" before the pupils of two schools in that city, November 26. Mr. Patterson has been elected treasurer of the Rotary Club of Bay City, for the ensuing year.

CONFERENCE OF AUDITORS.—A conference of the division auditors and the New York office accounting staff, was held in the comptroller's office in New York, during the week ended December 11, last. This is the second conference, the first having been held in July, 1913. In addition to discussing a programme of subjects at the meeting, addresses were made by president Newcomb Carlton, commercial general manager, J. C. Willever, and president W. L. Jacoby, of the American District Telegraph Company. The comptroller arranged a dinner and theater party for the division auditors on the evening of December 10. Among those present, in addition to those named were: H. W. Ladd, auditor; G. K. Huntington, auditor of disbursements, and C. McKay, auditor of receipts, New York; division auditors, M. Quinlan, New York; W. McD. Milne, Chicago; C. W. Carver, Atlanta, Ga.; J. A. Sweeney, Dallas, Tex.; A. J. Sands, Denver, Col.; C. A. Rhodes, San Francisco, Cal.; and L. Roth, J. J. Clunan, J. W. Rahde, F. J. McLean, A. H. Sprague and M. A. Porter, of the accounting department, New York.

ALEXANDER DIXON, for many years porter on the Western Union business car "Morse," died Wednesday December 22, after a short illness at his home in Jersey City, N. J. Mr. Dixon was well known by Western Union people throughout the country, and accompanied President Newcomb Carlton, vice-president Belvidere Brooks and other officials on their business trips.

NEW OFFICE IN LOUISVILLE.—A new three-story building is being erected in Louisville, Ky., for this company.

MORSE CLUB DINNER.—The regular winter dinner of the Morse Electric Club will be held at the Hotel McAlpin, Broadway and Thirty-fourth Street, New York, Thursday, February 24. Mr. W. C. Merly, 16 Dey Street, is secretary.

The E. M. F. Society" Organized in Denver.

A number of the Western Union employes of Denver, Col., met November 26, and organized a society for the study of electrical science, especially as applied to the telegraph. It was christened "The E. M. F. Society" and plans were made to start classes on the fundamental principles of mathematics, gradually leading its members into the study of electricity, and the electric telegraph. Messrs. Abel, Anderson, and Snyder, employes who possess electrical engineering diplomas, and Mr. R. C. Prout, automatic chief, who has acquired a reputation for scientific knowledge in electricity, have kindly volunteered their services as instructors. To render the society of interest to those who do not desire to delve too deeply into the mysteries of electromotive force, two meetings per month are given over to lectures and entertainments of a general character, the alternate meetings only being devoted to technical study exclusively. The following officers were elected: L. Lyon, president; T. P. Dudley, vice-president; R. C. Prout, secretary; C. G. Niemeyer, treasurer.

CANADIAN NOTES.

MR. J. McMILLAN, manager of telegraphs, Canadian Pacific Railway Company's telegraph, Montreal, Que., was a New York visitor this week. He was accompanied by Mrs. McMillan.

THE CABLE

CENSORSHIP IN DENMARK.—The Danish administration advises that private telegrams to or from Denmark are subject to censorship, but not telegrams in transit. Telegrams conveying information about Danish military affairs are not admitted. Private telegrams not conforming to these restrictions are refused or stopped without advice to the office of origin.

Cable Communication with Germany.

The American Association of Commerce and Trade of Berlin has sent wireless messages to the speaker of the House of Representatives and the Chamber of Commerce of the United States at Washington, urging the pressing need of re-establishing cable connections with Germany under control of the American government, and asking Congressional action toward this end.

The association believes the result can be accomplished by taking advantage of Germany's earlier offer to turn over the several cables to the American government to repair and operate, or by laying a purely American cable between the United States and Scandinavia or Holland.

It is pointed out that under either plan dis-

patches would come under American censorship, which would prevent the misuse of the cable in a military way.

Cable Interruptions.

Interruptions to submarine telegraph cables are reported to December 28, as follows:

Azores and Emden (two cables), August 5; Shanghai and Tsingtau, and Tsingtau and Chefoo, August 24; Sweden and Germany, September 30; Almeria and Melilla, October 1; Penongomera and Alhucemas (defective cable), October 1; Yap and Menado (offices closed), October 7; Obock and Djibouti, November 6; Constantinople and Tenedos, November 6, 1914; Paramaribo and Cayenne, November 13; Tanger and Cadiz, December 8, 1915.

Strength of Wooden Poles.

The decay of poles before being placed in position in the line may be of several kinds, and these, with the several kinds of cracks or other injuries, constitute what are known as defects, says *Electrical World*. Since, in designing, the strength of a pole is computed as that of a solid homogeneous cylindrical section, it is evident that pronounced defects may materially affect the actual strength. Therefore either pole specifications and inspection must be strict enough to eliminate poles whose actual strengths are not reasonably close to their assumed values or else a factor of safety must be used to take care of irregularities.

Some detailed instructions to inspectors would seem very desirable, since exactly the same defect may have an entirely different significance in two locations on the pole. Thus a rotten heart, very common in cedar, may be in the center of the cross-section, and therefore of the least effect, or it may be well toward one side. A wood pole is not greatly affected by hollowing out a small portion at the center of the cross-section, but the strength is decreased by any loss of area near the circumference or by any deduction of diameter.

UNITED STATES MILITARY TELEGRAPH CORPS.—One of the most interesting publications concerning the Society of the United States Military Telegraph Corps is the annual report of the Society for 1915, just published. The thirty-third re-union of the Society and the fifty-fourth anniversary of the founding of the corps was held in New York, October 13, 1915, the proceedings of this meeting being covered in the report. The pamphlet is attractive in every way—the contents and make-up. It contains an unusual number of interesting features, comprising mostly pictures of prominent members of the Military Telegraph Corps, their sons, grandsons, etc. Another feature of interest is the photographic reproductions of a military telegraph order signed by John A. Dix, secretary of the treasury in the civil war period; a sentence written by Prof. S. F. B. Morse, May 24, 1844, in connection with the sending of the first message, and greetings to the Military Telegraph Corps from Mr. Andrew Carnegie, dated October 6, 1915. On the front cover is an enlarged facsimile of the Society's button, produced in the proper colors.

THE TELEPHONE.

MESSRS. F. H. BETHELL and O. H. Cutler, New York, have been appointed members of the executive committee of the New York Telephone Company.

MR. H. F. HILL, vice-president, Michigan State Telephone Company, Chicago, Ill. has been elected a member of the executive committee of that company.

MR. CHARLES FRANCIS ADAMS of Boston, has been appointed a member of the executive committee of the American Telephone and Telegraph Company, succeeding Mr. Alexander Cochrane, resigned. Mr. Cochrane remains a member of the board of directors.

MR. CHARLES T. HOWARD, former secretary and treasurer of the Providence Telephone Company, Providence, R. I., has been elected a member of the executive committee and vice-president of the company, succeeding Mr. F. H. Peckham, resigned. Mr. H. S. Robinson, former assistant secretary and assistant treasurer, succeeds Mr. Charles T. Howard as secretary and treasurer.

CONFERENCE IN NEW ORLEANS.—A conference of the Louisiana and Mississippi district officials of the Cumberland Telephone and Telegraph Company was held in New Orleans, La., December 8. Seventy-five district managers, district plant chiefs and district traffic chiefs were in attendance. Mr. C. A. Starr, division manager of the company, presided.

SCIENTISTS TALK OVER TRANSCONTINENTAL TELEPHONE.—At the annual dinner of the New York Academy of Sciences, held at the Manhattan Hotel, December 20, the members talked science and exchanged congratulations over the transcontinental telephone with the members of the California Academy of Natural Science, which held a meeting at San Francisco at the same time.

PREPAREDNESS.—At a meeting of the Boston section of the Telephone and Telegraph Society of New England, at the Franklin Union Auditorium, Boston, Tuesday evening, December 28, Adjutant-General Cole and Captain Chase, chief signal officer of the Massachusetts Volunteers, made addresses and explained what telegraph and telephone men can do to prepare themselves to render their country the most efficient military service in time of need.

BOSTON PLANT CHAPTER.—The Boston Plant Chapter, Telephone and Telegraph Society of New England, held a supper and entertainment at Copley Hall, Boston, Tuesday evening, December 21, 1915. The telephone society orchestra rendered excellent music during the evening, and in addition to the orchestra and extensive musical programme contributed to the festivities. There was a large attendance, and a very enjoyable evening was passed. Mr. Gordon S. Wallace, 125 Milk Street, is secretary of the chapter.

PIONEERS TRIP IN VERSE AND PROSE.—Mr. C. W. MacKenzie, of the New York Telephone Company, Buffalo, N. Y., has written an interest-

ing diary of the trip of the Telephone Pioneers of America to San Francisco, where the fifth meeting of the association was held September 21, 22 and 23. The account has been mimeographed and bound in pamphlet form for distribution among Mr. MacKenzie's friends. It makes an excellent record of this memorable trip. Mr. MacKenzie has also separately described the trip in verse.

United States Independent Telephone Association.

The National Independent Telephone Association and the Independent Telephone Association of America met in joint convention in Chicago, December 8, 9 and 10, 1915, and each gave up its separate existence in order to combine and form a new organization, which was named the United States Independent Telephone Association.

After the organization formalities were disposed of, addresses were made by Beecher W. Waltermire, chairman of the Ohio Public Utilities Commission, on "Commission Regulation of Public Utilities," F. W. Sweeney, chief examiner of accounts of the Interstate Commerce Commission, and others. The subject of standardization was discussed by Dr. Frank A. Wolff, of the Bureau of Standards, Washington, D. C., Arthur Bessey Smith, H. D. Currier, F. J. Heavens, and others.

The officers of the new United States Independent Telephone Association are as follows: Chairman of the board, E. B. Fisher, Grand Rapids, Mich.; president, C. Y. McVey, Cleveland, Ohio; first vice-president, W. H. Bryant, Mobile, Ala.; second vice-president, G. W. Robinson, St. Paul, Minn.; third vice-president, F. B. MacKinnon, Washington, D. C.; secretary-treasurer, W. S. Vivian, Chicago, Ill.

Review of Principal Articles in Contemporary Telephone Publications.

TRAINING OF EMPLOYEES.—Mr. F. B. Evans, jr., traffic superintendent, Philadelphia, Pa., is the author of an article entitled "The Selection and Training of Employees," in *The Telephone News* for December 15. The traffic department of the telephone company in Philadelphia alone selects for employment 400 persons from 7,000 applicants each year.

TERMINALS.—Under the caption "Facts every employe should know about the telephone," Mr. E. B. Tuttle presents an article on the subject of "Terminals" in *The Telephone News* for December 15. The article goes into details as regards the construction of terminals and is well illustrated.

ADVERTISING YOUR TELEPHONE NUMBER.—Under the caption "Points for a Sales Talk," *The Telephone Review* for December brings to the attention of telephone salesmen the importance of the telephone number in advertising. The incident described is the experience of a New York City firm who, having certain real estate to sell, advertised an

auction and headed the advertisement with the office telephone number, in large print. A few days after the sale the president of the company wrote a letter to the telephone company telling of the success which this advertisement of the telephone number had brought.

EFFICIENCY IN TELEPHONE SERVICE.—Mr. Charles J. Murphy made an address before the Indiana Independent Telephone Association on "Efficiency in Telephone Service," and gave some interesting and valuable hints along this line. The address appears in the *Telephone Engineer* for November. "The secret of success in every business," Mr. Murphy says, "is efficient service and economical management. Every telephone company, be it ever so small, must and should have its work divided so that some one is responsible for the details of that department."

RADIO-TELEGRAPHY.

Marconi Notes.

Mr. Sidney St. J. Steadman, of London, of the legal department of the English Marconi Company, arrived recently on the steamer "Rotterdam" for a brief visit on business of the English Marconi Company.

Mr. C. H. Taylor, engineer of the transoceanic division, is in Hawaii conducting the final tests with Funabashi, Japan, preliminary to inauguration of the Japanese service early in the new year.

The Marconi Wireless Telegraph Company of America entertained its office staff to the number of 100 Friday afternoon preceding Christmas Day, using the entire thirty-first floor of the Woolworth Building. Luncheon was served, after which a mirth-provoking entertainment was given by Maurice, the slight-of-hand artist, followed by music and dancing. All the officials of the company were present and the occasion was greatly enjoyed. Among the guests were four representatives of the English Marconi Company, Messrs. A. Williamson, G. H. Bryant, C. C. Hall and Short, of London.

BLESSING FOR WIRELESS.—A dispatch from Rome states that pope Benedict is preparing to confer the papal blessing on wireless telegraphy. In taking this step the pontiff will restore the ancient custom of the church of blessing inventions which confer great benefit to humanity.

LARGE MONEY ORDER BY WIRELESS.—Twenty-five thousand dollars was sent from Newark, N. J., to Germany by wireless money order, December 21. This sum represented the receipts from a bazaar held in Newark to raise money for the relief of the war sufferers of Germany and her allies.

WIRELESS GREETINGS TO NAVY.—Hon. Josephus Daniels, secretary of the navy, on the night of December 24, sent a radiogram around the world to all ships and naval stations of the United States navy, extending Christmas greetings to the officers and men of the service, on behalf of the government and people.

KILLED BY SHOCK FROM AERIAL.—The aerial of an amateur wireless outfit in Astoria, L. I., N. Y., sagged and came into contact with an electric light wire during the recent storm. A servant in the family of the young amateur, in cleaning around the instruments, received the full charge of 2,400 volts and was instantly killed.

WIRELESS TO JAPAN.—The Japanese government has notified the Marconi Wireless Telegraph Company of America that the new wireless station at Funabashi, near Tokio, is completed and will be ready for trans-pacific communication soon after the New Year. The Funabashi station is equipped with the Marconi apparatus, but is owned and operated by the Japanese government. The distance between the Honolulu and Funabashi stations is 3,400 miles.

Amateur Wireless Association.

Secretary of the Navy, Josephus Daniels has written a letter to the National Amateur Wireless Association, of which Guglielmo Marconi is president, expressing his approval of the organization, and asking that its members hold themselves ready to co-operate with the government, if their services should be needed in a "time of public peril." Mr. Daniels requested that a list of the members be turned over to the government, and this will be done. The headquarters of the association are in New York and Mr. J. Andrew White is acting president.

Quick Work.

The Relay Automatic Telephone Company, Ltd., of London, England, had an exhibit of its new type of automatic telephone system at the recent convention in Chicago of the independent telephone associations, the bringing of which from London was accomplished in remarkably quick time. Fourteen days from the time the decision to make the exhibit was made the apparatus was received in good condition at the Hotel La Salle, in Chicago, after overcoming many difficulties due to war conditions in England.

Mr. Godfrey C. Isaacs is managing director of the English Marconi Company and is also chairman of the Relay Automatic Telephone Company. With the assistance of the English Marconi Company and the hearty co-operation on this side of the Marconi Wireless Telegraph Company of America, of which E. J. Nally is vice-president, the demonstration was made in Chicago in three weeks from the time it was decided in London to make it. It was necessary to bring engineers to set up the plant on such short notice and G. H. Bryant, C. H. Hall and A. Williamson were chosen for this work. As two of these men are of military age a good deal of time was spent in getting special passports from the British foreign office, to enable them to leave the country, and many other like difficulties had to be overcome before clearance papers could be secured.

The three gentlemen named who had charge of the exhibit are all in the service of the English Marconi Company.

The United Press Staff in 1887.

In 1887 the executive and operating staffs of The United Press in New York were composed largely of celebrated telegraphers, headed by general manager Walter P. Phillips. The operators were selected on account of their exceptional ability. Everyone of them had a national reputation for speed in transmission, accuracy in receiving, backed up by sound newspaper judgment. The personnel of this body is shown in the accompanying illustration in which many familiar and well-known faces will be recognized.

The photograph was taken on the roof of The United Press headquarters located at 187 Broadway, New York, in May, 1887. The tangle of telegraph wires which existed overhead at that time

the night representative of the Western Associated Press, and many old-time telegraphers outside of New York City welcomed the receipt of "30 Barclay Gallagher." Mr. Gallagher died twelve years ago at Baltimore, where he had been manager of The Associated Press for several years previously.

P. C. Cusick was one of the gilt-edged members of the telegraph staff at that time. He afterwards drifted into exclusively newspaper work. He died many years ago.

Col. Finley Anderson held a very responsible executive position with The United Press in those days. It was his duty to make contracts with the various newspapers for service. Col. Anderson had an enviable civil war record. He was selected



THE UNITED PRESS STAFF, NEW YORK, IN 1887.

is incidentally well illustrated in the picture. Now there is not a wire visible from this roof or any other in the downtown section of the city.

The names of the gentlemen shown are as follows:

Top row, left to right—James P. Gardner, Barclay Gallagher, P. C. Cusick, Finley Anderson, A. L. Suesman, M. H. Crane, Walter P. Phillips, C. H. H. Cottrell, C. R. Baldwin, C. H. Bogle, F. N. Bassett, A. S. Ayres, C. H. Davis.

Bottom row, left to right—Frank J. Kihm, Richard G. Morris, Ralph D. Blumenfeld, Richard Spillane, Martin F. Moore, Wallace H. Grant, J. E. Wright, R. W. Martin, E. A. Sprong.

It will be interesting to note what changes the intervening time, twenty-eight years, has wrought in the group. James P. Gardner was a copy reader for The United Press at that time. He died fifteen years ago.

Barclay Gallagher was one of New York's best newspaper men of his day. He was for many years

as a member of the Military Telegraph Committee to escort the remains of General U. S. Grant to their last resting place in Riverside Park, New York. Col. Anderson was thrown from the horse, which he had borrowed from Buffalo Bill for the occasion. He never recovered from the injuries received, although he lived several years afterwards. In 1866 Col. Anderson startled the world by cabling from London to the New York *Herald* at \$5.00 per word, the articles of agreement forming the German empire. He then represented the New York *Herald* at London. Col. Anderson was entrusted with the task of fitting out the Stanley expedition to search Africa for Livingstone.

A. L. Suesman was identified with the telegraph department, but he was soon elevated to the position of general western manager, with headquarters at Chicago, where he made an excellent executive. He was a native of Providence, R. I., and was well known in that section of the country. He passed away three years ago.

M. H. Crane was another member of the staff of brilliant telegraphers. For years previous to 1887 he had been in the service of the Associated Press in New York. Since 1897, when The United Press went out of existence, Mr. Crane has been identified with other press associations and with the brokerage business.

Walter P. Phillips was in those days the moving spirit in news gathering circles. He had surrounded himself with the best newspaper and telegraph talent that could be obtained and the reputation of The United Press was at its height. He occupied the position of general manager and his years of experience in Associated Press circles eminently fitted him for the responsible position he occupied for so many years. Mr. Phillips is now the head of the printing department of the Columbia Graphophone Company at Bridgeport, Conn.

C. H. H. Cottrell, another brilliant telegraph man, has had a long newspaper career. For many years he occupied the position of cashier of The United Press at New York. For the past fifteen years he has been a resident of New Orleans, where he holds a position with the Western Union Telegraph Company.

Charles R. Baldwin was treasurer of The United Press. He was a resident of Waterbury, Conn. He was the proprietor and publisher of the *Waterbury American* and was interested in banking and other financial institutions in the city in which he resided. He was mayor of Waterbury for one term. He died several years ago.

Charles H. Bogle was one of the special agents of The United Press. About twenty years ago he engaged in outside business, in which he continued until about 1912, when he returned to the key, and is now working for a telegraph company in New York City.

Frederic N. Bassett was the general eastern manager of The United Press for many years until it ceased to exist. He was a brilliant journalist and telegraph operator. His administration of the office which he occupied for so many years was very satisfactory. Mr. Bassett died at Washington, D. C., four years ago.

Albert S. Ayres, familiarly known as "Patsy" Ayres, was one of the most brilliant telegraphers the country had ever produced. He was a native of Ohio and started his telegraph career at Dayton. He worked in all sections of the country. His beautiful Morse and copper plate copy were admired by every employer of telegraphic help. His services were much sought after. He remained identified with The United Press until 1897, after which he worked for a brokerage concern in Cincinnati, Ohio. He died in that city in 1908.

Charles H. Davis, another wonderful operator in his days at the key, was a beautiful sender as well as a receiver of unusual ability. Mr. Davis was the author of one of the first electrical books ever printed. This production appeared in the middle seventies under the title of "Hand-Book of Electrical Diagrams and Connections." This work contained a description of every telegraphic apparatus in use at that time. Mr. Davis had a very success-

ful career in outside business and for ten years had the reputation of being the leading photographer in the United States. He was located on Fifth Ave., and had the patronage of New York's 400. Mr. Davis is engaged at the present time in commercial pursuits.

Frank J. Kihm was one of the champion telegraph operators of his day. He won many medals and purses as an operator of exceptional ability both as a sender and a receiver. He afterwards drifted into newspaper work and was, for many years, telegraph editor of the Brooklyn *Eagle*. He passed to his Heavenly reward a year ago.

Richard G. Morris, an old Cincinnati operator, was one of the star press operators in New York in 1887. He drifted into newspaper work and was with the New York *Sun* for many years. He died twelve years ago.

Ralph D. Blumfeld, a product of Wisconsin, had an eventful career while in New York. He was a brilliant telegrapher, an able newspaper man and rapidly pushed to the front ranks of journalism in the Metropolis. After serving a term with The United Press he became identified with various newspapers in this city. He also had a wide experience in Europe. He is now one of the owners and editor-in-chief of the *Daily Express* of London, one of the leading newspapers of England. He is just as prominent in London to-day as he was in New York.

Richard Spillane, another star operator and a newspaper man, has always occupied a position in the front ranks. He was for many years editor on various New York newspapers. He is at present a syndicate newspaper writer and is a resident of the Metropolis.

Martin F. Moore was one of the editors for The United Press. He was a man of literary ability and he still occupies a position in newspaper circles.

Wallace H. Grant was an operator of the first magnitude. His beautiful work at the wire has never been excelled. Mr. Grant died many years ago.

John E. Wright, one of America's brilliant telegraphers, was manager of the operating department of The United Press when the photograph was taken. He is known the country over as "Jack" Wright. In 1887 he was assigned to London as the representative of The United Press interests. Mr. Wright in the middle seventies was night manager of the Associated Press in New York. He went to England in 1873 with Thomas A. Edison as his assistant. For many years past he has devoted his time exclusively to the development of printing telegraph systems and the Wright printing system is his product.

Robert W. Martin, better known as "Bob" Martin, needs no introduction. His fame as a telegrapher was well known throughout the country. He was a military telegrapher during the civil war. His brilliant work at the key, always in charge of the fastest circuits between the years 1856 and 1886, has never been surpassed. He was a writer of great ability. For many years he was the Euro-

pean editor for the New York *Sun*. He died two years ago.

Edward A. Sprong, another one of The United Press' best operators, came to New York from Cincinnati in the early eighties. He devoted many years of his life to the newspaper and the telegraph service. For the past fifteen years, however, he has preferred to identify himself with brokerage interests and to-day he holds a position in a Wall Street, New York, banking and broker house.

No one can read these lines without being favorably impressed with the high character and standing of this little band of telegraph and newspaper men. Of course the sketches are brief. Columns of matter could be written about many of those whose pictures are prominent, but adequate space in an article such as this is out of the question. Those who are living will no doubt continue to prosper. Those who have passed away will long be remembered for their exceptional ability and accomplishments.

Prudence.

BY J. V. RIDDICK, NEW YORK.

Webster defines prudence as, wisdom, discretion, "An ounce of prudence is worth a pound of wit," "No deity is wanting when prudence is present," "Prudence is the charioteer of all virtues,"—the number of proverbs, sayings of philosophers and learned men, in extolling this great quality are too numerous to be embraced here. Nor need we wonder, when we consider its inestimable value, that so many praises have been freely bestowed upon it through all ages. We cannot over estimate its helpfulness, no matter what our sphere of life may be. It must satiate, as it were, all our words and acts.

The governments of the belligerent nations of to-day must refrain from any act on land or sea offensive to the present neutral powers; the governments of the neutral nations must observe strict neutrality towards all belligerents; the generals on the battlefields have to cope against the feints of a clever adversary; the captain of the steamer guiding his vessel safely to port; the poor man looking for a safe investment for his slender savings; the rich man avoiding extravagances; discussing our own affairs or those of others—these are only a few of the many instances where it is of the highest consequence to exercise prudence in words and deed. The student of history, will find numerous examples where lack of prudence led to grave disasters.

There is on the other hand the mistake of being too cautious. "Never venture, never win." Scripture tells us of the man who, going into a far country, called his servants together and delivered to them his goods, to every one according to his proper ability. On his return, he again called them together to ask an account of what he had given them. We are told all of his servants, with the exception of one, were able to show him they had made good use of the talents he had bestowed upon them. These he commended for their prudence.

"Well done, thou good and faithful servant." He who had received only the one talent and who, being afraid of his master went and buried his treasure, the master rebuked.

It is not expected, of course, that a man will spend immense sums of money erecting buildings, without the expectation of a fair return. If, after maturely considering the locality, etc., he is reasonably certain a fair amount of business will fall to his share he will be making a very profitable investment.

However, there is nothing certain in this life and after all is said and done, the outcome of our calculations may not reach our expectations. "The best laid schemes o' mice and men gang aft agley." But it is better to have tried and failed than not to have tried at all. Prudence, therefore may be described as looking forward. We are entirely ignorant of our future, not even knowing what the next day may bring forth. To-day is mine, but to-morrow? In all our undertakings we should exercise the greatest care. If prudence be our watchword and our guide, success will surely follow.

Reminiscences of the Civil War.

IN TELEGRAPH AND TELEPHONE AGE dated October 16, 1915, was printed an interesting account of the Civil War experiences of Dr. William D. Gentry in which reference was made to Mr. James Merrihew, who was chief operator of the Philadelphia office at the time mentioned by Dr. Gentry, and who afterwards became general superintendent for the Western Union Telegraph Company, at New York, retiring from active service several years ago.

Mr. Merrihew, in a recent communication, adds some interesting information on the subject of Dr. Gentry's references.

"I do not think," Mr. Merrihew says, "that the Magnetic Company's rule forbidding sound reading was ever countermanded; it was never strictly enforced. About 1852 superintendent William P. Westervelt came behind me when I was receiving in the old Magnetic office, in the Ledger Building, Philadelphia, and said: 'Boy, don't you know the rule forbidding taking by sound,' to which I replied: 'Mr. Westervelt, if I have to copy from paper I cannot keep up.'

"Well, he said, you must let your paper run.'

"I do not think that I ever copied from the tape after about 1852, if so late as that. Mr. Gentry's experience referred to was in the American Company's office on Third Street, Philadelphia. The use of paper was entirely abolished in that office shortly after that date, 1861, by the installation of sounders on low desks. I was then chief operator and acting manager," says Mr. Merrihew in conclusion, "the manager, Mr. H. E. Thayer, having been detailed as government censor at Washington, until about the close of the Civil War."

A DEFINITION OF TIME.—Time is the interval between the beginning and the end.

Efficiency Engineering in the Telegraph Service.

(Continued from page 577, December 16, 1915.)

When a manager enters his office in the morning he no doubt has thoughts of many achievements to be accomplished during the day. His programme of procedure has been carefully thought out and it is realized that its execution means a large addition to the business of the company. Within five minutes of the arrival at the office something has gone wrong which makes it necessary to change certain duties, with the result that not one of the ideas so carefully thought out have been put into effect. The programme was shattered at the very beginning of the day's work. No one can figure on unexpected obstacles or new matters of more pressing importance, but, nevertheless, these are the things that shape and control the daily routine of the average manager. Of course it pays to organize the work. This means efficiency. Without organization chaos reigns supreme. There is no aim or object in the routine of the day. Many items needing attention are taken from the desk, looked over and put back again to be attended to later. Some of these papers have gone through this process of examination a number of times with the same result. This is an extravagant waste of time. If it is at all possible to dispose of a document when it is first read and the facts are clear to the mind, there should be no hesitation to add the necessary endorsement or statement and pass it along to others to whom it should go. It pays to know how to get the most from your own business ability and there is no surer, easier, less expensive road to personal efficiency than to study the methods that lead to successful results.

Many telegraph people have failed in the objects to be attained after studying the cause of the miscarrying of their ideas. After they had reached a satisfactory conclusion they have turned about and rebuilt on the old wreck a programme that won. There are simple yet natural laws that govern all business transactions. These must be studied. Many of them are studied, but unconsciously. We reason them out without knowing that our brain is undergoing this mental process of development. When we are ready to act on a question our judgment is usually accurate. In many cases we do not know why it is so. The fact remains, however, that we reach a satisfactory solution of the problem apparently without knowing it. Many of us think that we have given the subject little or no thought whatever. The brain, with no evident effort on our part, solved the problem for us and we are credited with possessing accurate judgment. Efficiency engineering strengthens one's capacity for management and it teaches one to control the wills and dominate the actions of men around us. Inefficiency means that the desk is piled up with unattended-to papers, the older ones often burying from view the new material which should have immediate attention. The remedy for this is to classify the desk into

departments. Sort and classify the papers and arrange them according to their order of importance. Those that need immediate attention should be placed together; those that can stand a little delay should not take precedence over the more important subjects and those that depend upon the arrival of other papers before they can be taken up, should be classified according to their importance. This is efficiency in desk management.

We are told of a manager who had occasion to visit a neighboring city on business. After he had finished he paid his respects to his brother manager. The latter had a reputation for never doing to-day what could be put off until to-morrow. The visitor saw the condition of the manager's desk, and remarked that if his office was in that condition, he would suffer from nervous prostration. He volunteered to systematize the manager's work for him, and in the course of two or three hours had his desk cleared of the papers that needed prompt action. The manager promised to keep his visitor friend posted on the condition of his desk from day to day. This he did. The result was that within three years the superintendent had recommended the former dilatory manager for promotion, based on the ground that he was most prompt in attending to all documents referred to him for information or action. This is only one in many similar cases that have occurred within telegraph circles.

The telephone conditions are somewhat different. If a telephone manager or other official is backward in his correspondence he does not receive repeated telegrams and letters urging more prompt action. He is called up by long distance telephone and the general superintendent or general manager asks for the information. If the manager is not able to supply it off-hand he is given a reasonable time to secure it and the incident is closed without fuss or bother.

The telephone is a wonderful agency. It keeps a telephone official prompt in the discharge of his duties. He cannot do otherwise. If he neglects his office, the telephone furnishes the information. If he neglects his duty, the same instrument furnishes the evidence against him. The telephone makes an official efficient, reliable, painstaking and ever prompt in the transaction of the business brought before him. He could not, if he wished, follow in the footsteps of his telegraph brother, as previously described.

(To be Continued.)

Mr. S. S. Garwood, Philadelphia, Pa., in remitting to cover his subscription for another year writes: "I am enclosing a check for subscription and wish for you and for TELEGRAPH AND TELEPHONE AGE abundant success in the new year which we are about to enter. The publication keeps me in touch with old friends. Although I have been out of the telegraph and telephone business for more than ten years, my activities are mainly in electrical lines and I hope to continue the friendly relations maintained for over fifty years with the telegraph and telephone people."

E. O. Chase, a Former Writer of Telegraph Sketches.

In the sixties and early seventies one of the noted writers of telegraphic stories which appeared in the telegraph papers at that time was Mr. Edward Oliver Chase who produced some very excellent telegraph literature under the nom de plume of "Nuf Ced." Old timers will remember Mr. Chase. They will also be pleased to learn that that gentleman has been in the manufacturing and contracting business and maker of light and fine machinery at Newark, N. J., since 1872.

Mr. Chase was born at Philadelphia, Pa., October 28, 1850. After learning telegraphy in 1862 he held positions at Portsmouth, N. H., Portland and Bangor, Me. He was operator for the Western Union Telegraph Company for ten years. For four years he received press report in Bangor, Me. He graduated into a business of his own, as previously mentioned, in 1872, although he acted as chief operator for the Western Union at Saratoga during the summer seasons of 1873 and 1874. During one of the seasons Mr. Chase saw the "one man" office at Saratoga expand to a twelve man outfit, including the four hotel operators.

It will be interesting to record that Mr. Chase's shop was in front of the space occupied by Mr. Thomas A. Edison's first experimental shop. The location was at 9 Alling St., Newark. The borrowing and lending of tools between Mr. Chase and Mr. Edison was of daily occurrence.

Telegraph Oddities.

One of the world champion baseball teams has signed a new pitcher for next season. He is known as Telegraph Pole or Slim Love. He is 6 feet, 7½ inches in height and so thin that he resembles a telegraph pole.

In an eastern city where economy and less red tape is no doubt the watchword, the councilmen passed a resolution ordering the telegraph companies to place their wires underground. The text of the resolution was transmitted to the managers of the local telegraph offices on a postal card, and they were given thirty days to comply with the order.

Crows and snakes, according to a Japanese engineer, cause much trouble and even occasional interruptions in the operation of high-tension transmission lines in the Island Empire. The crows perch on the crossarms and short circuit the lines with their wings, while the reptiles climb the poles and towers to sun themselves, and, getting across the conductors, also cross the wires.

Things Worth Remembering and Practicing.

1. The value of time. 2. The success of perseverance. 3. The pleasure of working. 4. The dignity of simplicity. 5. The worth of character. 6. The power of kindness. 7. The influence of example. 8. The obligation of duty. 9. The wisdom of economy. 10. The virtue of patience. 11. The improvement of talent. 12. The joy of originating.—*Marshall Field.*

TELEGRAPH TO MEXICO RESTORED.—Direct telegraphic communication between the United States and the principal cities in Mexico has been re-established.

EXAMINATION FOR RADIO INSPECTOR.—The United States Civil Service Commission will hold an open competitive examination for radio inspector, for men only, on January 19, at the usual places throughout the country. From the register of eligibles resulting from this examination certification will be made to fill vacancies in the positions of radio inspector and assistant radio inspector, at salaries ranging from \$1,200 to \$1,600 a year, at New York and San Francisco and vacancies as they occur at other points.

HANDY POCKET DICTIONARY.—The Excelsior Webster Dictionary is a very handy little book, vest pocket size. It has a margin index which greatly facilitates the finding of a word, and it contains much information of a general and practical character besides. Every one should have a copy either in the pocket or on the desk, where it can be instantly referred to. Price, 50 cents per copy. For sale by TELEGRAPH AND TELEPHONE AGE, 253 Broadway, New York.

ROBINSON TELEGRAPHIC CIPHER.—A revised edition of The Robinson Telegraphic Cipher has been issued. This cipher is very popular among business men and shippers throughout the country, and it is of convenient size to carry in the pocket. It has been carefully revised and brought up-to-date by Mr. S. L. Robinson, of Chicago, who is the author and proprietor of the work. The price of the book is \$1.50 per copy. For sale by TELEGRAPH AND TELEPHONE AGE, 253 Broadway, New York.

Book on Cable Testing and Working.

The third edition of "Beginners' Manual of Submarine Cable Testing and Working," by G. M. Baines, Carcavellos, Portugal, has been issued. The author is a practical cable man and has written the book in as clear a manner as possible for the benefit of beginners and students. The book contains eighteen chapters, covering every branch of cable work, principles and practice, and will be found very useful by all telegraph, telephone and general electrical engineers.

The price of the book is \$3.50 per copy, and copies may be obtained of TELEGRAPH AND TELEPHONE AGE, 253 Broadway, New York.

There will be lively times ahead for line repairers in Europe when hostilities cease, and they are instructed to "hook up" the wires connecting the various European countries telegraphically and telephonically.

Mr. J. L. Ferguson, manager, Postal Telegraph-Cable Company, Lake Charles, La., in remitting to cover his subscription for another year writes: "Your action in renewing my subscription exactly meets with my approval. Yours is the journal that keeps us brushed up on the fine points of the game."

Questions to be Answered.

[The following questions are based upon the contents of Jones' "Pocket Edition of Diagrams and Complete Information for Telegraph Engineers and Students," and have been prepared for the study of this book. The asking of questions to be answered by the student is an excellent method of acquiring information, besides cultivating the habit of concentration of thought which is so essential in the study of any subject. Every telegrapher who is desirous of learning the technical side of telegraphy should follow this method of instruction diligently. He will be surprised to note from time to time how his knowledge is increasing, and this almost without effort on his part. This book is sold by TELEGRAPH AND TELEPHONE AGE at \$2.00 per copy.]

What are the advantages of the Atkinson repeater? (page 207)

What instruments are controlled by the single line relays of this repeater?

How is a temporary path around the contact points of the relay to the transmitter coil secured?

Study the diagrams shown on pages 208 and 209.

What means are employed in the Horton repeater to control the lever of the main line relay? (page 210)

How is the ordinary retractile spring dispensed with? (See illustration on page 211)

What are the features of the Ghegan automatic repeater? Study the diagrams of this repeater on pages 214 and 215 in connection with the text.

For what purpose are half repeaters employed? (page 216)

What is a defective loop or side line repeater and what is it used for? (page 221)

What is the advantage of such an arrangement?

How is this device connected temporarily with multiplex apparatus? (Study diagram on page 108)

Under what circumstances should a regular half Towe or half Milliken repeater be employed? (page 224)

What are double loop repeaters, and what does such a device consist of?

What portions of the system do the transmitters and the repeating sounders control? (see diagram on page 225)

How is the sending apparatus arranged? (page 226)

How are the contact points of the transmitters prevented from opening?

Why is it necessary to employ an additional battery for the second loop?

Why are lamps or resistance coils employed in the shunt and loop conductors?

When should the double loop repeaters be used?

How is the apparatus for the double loop repeater set up? (see diagram on page 227)

Study the Wood double loop repeater shown on page 228. and describe its operation.

(To be Continued.)

Messengers in North Dakota.

Judge C. M. Cooley, of the district court at Grand Forks, N. D., has decided, in the case of the city against the Western Union Telegraph Company, that the company must pay a license of \$3.00 per

year for each of its messengers and give a bond of \$500, in compliance with the city ordinance. Counsel for the telegraph company will take an appeal to the Supreme Court. This case furnishes a new idea in taxation. If it should ever strike the fancy of the tax authorities in large cities and they adopt it, the telegraph companies would soon be rendered bankrupt.

Holiday Greetings Acknowledgment.

We acknowledge with appreciative thanks holiday greetings from Henry W. Pope, former secretary of the Telephone Pioneers of America; W. F. Williams, superintendent of telegraph, Seaboard Air Line, Norfolk, Va.; George M. Myers, ex-president Old Time Telegraphers and Historical Association, Kansas City, Mo.; Arthur Lockwood, Brookfield Glass Company, New York; Harry A. Tuttle, president and general manager North American Telegraph Company, Minneapolis, Minn.; Commercial Cable Company, New York; W. Marshall, assistant manager of telegraphs, Canadian Pacific Railway Company's telegraph, Winnipeg, Man.; E. W. Collins, general superintendent Postal Telegraph-Cable Company, Chicago, Ill.; John F. Skirrow, associate electrical engineer, Postal Telegraph-Cable Company, New York; Frank J. Sherry and New York staff of the French Cable Company; E. J. Nally, vice-president and general manager Marconi Wireless Telegraph Company of America, New York; G. W. Jett, superintendent of telegraph, Norfolk and Western Railroad, Roanoke, Va.; P. C. Kullman & Co., bankers and brokers, New York; Jos. Marshall, Western Union Telegraph Company, Savannah, Ga.; J. B. Dillon, Western Union Telegraph Company, Little Rock, Ark.; Charles S. Holmes, Woodhaven, L. I.; Kenneth W. Moore, advertising manager John A. Roebing's Sons Co., Trenton, N. J.; Samuel Wein, chemist, New York; G. H. Mills, manager Postal Telegraph-Cable Company, Providence, R. I.; John Egan, San Francisco, Cal.; H. C. Worthen, general manager Southern Division Western Union Telegraph Company, Atlanta, Ga.; W. H. Baker, secretary Western Union Telegraph Company, New York; John McMillan, manager of telegraphs, Canadian Pacific Railway Company's telegraph, Montreal, Que.; C. A. Johnson, manager Postal Telegraph-Cable Company, Meadville, Pa.; J. E. Rowe, Western Union Telegraph Company, Atlanta, Ga.; Chas. Vollertsen, Western Union Telegraph Company, El Paso, Tex.; S. V. King, Western Union Telegraph Company, Indianapolis, Ind.; W. I. McFatter, Western Union Telegraph Company, Boston, Mass.; Robert Mecredy, Philadelphia, Pa.; Dan S. Robeson, Philadelphia, Pa.; H. H. Allingham, superintendent canvas and complaints, Western Union Telegraph Company, London, Eng.; C. C. Adams, vice-president Postal Telegraph-Cable Company, New York; D. F. Ingold, chief operator Western Union Telegraph Company, San Francisco, Cal.

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BOUND VOLUMES of Telegraph and Telephone Age for 1913, 1914 and 1915 are for sale at the office of this journal, 253 Broadway, New York. The price is \$3.50 per volume, sent by express, charges collect.

Cable Codes.

The office of TELEGRAPH AND TELEPHONE AGE is headquarters for all cable cipher codes. Telegraph managers would do well to bear this fact in mind when customers make inquiries regarding such codes. We are prepared to furnish full information on the subject, our knowledge being based on thirty-five years' experience in handling the hundreds of codes on the market.

NEW YORK, JANUARY 1, 1916.

Happy New Year to All.

The year 1915 with its intense activities all over the world has passed into history and we are now at the threshold of a New Year. Most of us can look back and recall words and deeds that in the light of the present we would rather have left unsaid and undone, but all these are beyond recall now and we cannot make amends, but we can resolve to do better in the future. Someone has said, "All the treasures on earth would not bring back one lost moment." There are many moments yet to come into the lives of us all, so let us improve them and make the best of them, not only for ourselves individually but for our families, for our friends and for the world. TELEGRAPH AND TELEPHONE AGE extends to its friends, individually and collectively, its sincere wishes for a Happy and Prosperous New Year.

Alleged Suppression of Patents.

The engineers of the telephone and telegraph companies state that inventors complain to those who are backing them financially that they are not treated fairly by the representatives of the corporations and that the latter endeavor to hide or pigeon-hole good patents. The facts are, no one

can hide a patent, good or otherwise. All patents granted are announced publicly and tens of thousands of persons read of them. We do not see how it is possible for an engineer or other representative of a telegraph or telephone corporation to suppress a patent.

We have lately investigated many such complaints and find that frequently they are made to financial backers in order to throw the blame of their failure upon the companies. It is well known that the companies expend large sums of money annually in investigating inventions which they know do not possess merit. This is done to please and satisfy friends or men of influence who have brought such inventions to the attention of the telegraph and telephone authorities. Often inventors of national reputation invent something devoid of the slightest merit, but on account of their standing in the community a thorough investigation has to be made for the purpose of satisfying friends of the inventor as well as friends of the companies. We know positively that every invention that is brought to the attention of these companies is carefully considered. The companies are continually purchasing patents and it is ridiculous for would-be inventors to openly complain to those who are paying their bills that the telegraph and telephone doors have been closed to them.

The Record of 1915.

The year 1915 passes into history as one of the most memorable in progress and achievement in the annals of telegraphy, telephony and wireless. The great things that have been accomplished in the short space of twelve months, have come to us so rapidly, that we almost ceased to marvel at them as they occurred, however important and far-reaching they are or may be.

In telegraphy the principal advance has been in the wide extension of printing systems. Efficient methods of operation and management have been given great stimulus and application, and the welfare of employes has received a large share of attention on the part of the companies.

In telephony, the greatest achievement was the successful accomplishment of transcontinental wire telephony, this being followed by transcontinental and transoceanic wireless telephony.

Great progress has also been made in wireless telegraphy, although this line of work has been hampered by governmental restrictions and regulations arising out of the European war.

Following is the record of progress made during the year in all systems of electrical communication, and other events of note, arranged in chronological order:

Consolidation of Great North Western Telegraph Company and the Canadian Northern Telegraph Company, under the name of Great North Western Telegraph Company, January 1. Under this arrangement the local lines and offices of the Western Union Telegraph Company in the Canadian Maritime provinces are being operated by the Great North Western Company.

The American Telephone and Telegraph Company adopted a plan by which employes of the Bell System may purchase stock of the company.

Organization of the Western Union Electrical Society in New York, January 16.

Opening of the transcontinental telephone line between New York and San Francisco, January 25. This noteworthy event was celebrated in the presence at New York of a large gathering, including the mayor and other city officials, leading telephone men and others.

Opening of the Panama-Pacific Exposition at San Francisco by President Wilson at Washington, who sent the signal by wireless, February 20.

Annual meeting of the Mackay Companies in Boston, Mass., February 25.

Annual meeting American Telephone and Telegraph Company, New York, March 15.

The Telegraph and Telephone Life Insurance Association held its annual meeting in New York, March 17.

Meeting of the Western Division, Association of Railway Telegraph Superintendents, Chicago, March 17 and 18.

Annual meeting Western Union Telegraph Company, April 14.

Annual meeting of Marconi Wireless Telegraph Company of America, Jersey City, N. J., April 19.

Mr. Thomas A. Edison presented with the Civil Forum Medal for Distinguished Public Service, New York, May 6.

Spring Dinner Magnetic Club, New York, April 15.

Unveiling of memorial in Battery Park, New York, May 12, to wireless operators who lost their lives at sea in the performance of duty.

Election of Mr. J. J. Carty, chief engineer, American Telephone and Telegraph Company, New York, as president of the American Institute of Electrical Engineers, May 18.

Dedication of James D. Reid monument at Mount Hope Cemetery, Rochester, N. Y., June 23, in the presence of a large gathering of telegraph officials, railway telegraph superintendents and others.

Annual convention of the Association of Railway Telegraph Superintendents, Rochester, N. Y., June 22.

Convention of Train Dispatchers' Association of America, Minneapolis, Minn., June 15.

Sayville, L. I., radio station of the Atlantic Communication Company taken possession of by the United States government, and Captain W. H. G. Bullard placed in charge.

New main office of the Postal Telegraph-Cable Company at Philadelphia, Pa., opened June 13.

Laying of second cable between New York and Colon, for the Mexican Telegraph Company and the Central and South American Telegraph Company, completed July 23.

Annual convention of the International Association of Municipal Electricians at Cincinnati, Ohio, August 24.

Telegraph tournament at San Francisco, Cal., August 27, for the all-round championship and the

Carnegie diamond medal: Won by T. S. Brickhouse of San Francisco.

Wireless telephone messages transmitted from the United States naval radio station at Arlington, Va., to naval radio station at Mare Island, Cal., September 29. The messages were heard at Darien, Isthmus of Panama, and Honolulu, Hawaii. The distance from Arlington to Honolulu is 4,900 miles.

Convention of Railway Signal Association at Salt Lake City, Utah, September 14.

Convention of Telephone Pioneers of America at San Francisco, Cal., September 21.

Re-union of the Society of the United States Military Telegraph Corps, New York, October 13. A banquet was held in the evening.

Speech by wireless telephone successfully transmitted from naval radio station at Arlington, Va., to the Eiffel Tower in Paris, France, October 21.

Mr. Thomas A. Edison entertained by San Francisco Telegraphers at a unique banquet in that city, October 19.

Fall dinner of the Magnetic Club, New York, November 17.

Meeting of Eastern Division of the Association of Railway Telegraph Superintendents at New York, November 17.

Western Union Telegraph Company on December 1, announced that annual vacations will be given to all its employes after January 1, 1916.

Dinner and reception to Mr. J. J. Carty at Lotos Club, New York, in recognition of his achievements in wire and wireless telephony.

Varied Duties of Messengers.

The experiences of a telegraph district messenger boy are varied indeed, and anyone who cherishes the belief that the life of these modern Mercuries is at all monotonous, will be interested to know some of the many services rendered by them. Here are a few: Rolling invalid's chair; taking dogs for exercise; calling for laundry in emergencies; escorting strangers to their destination; purchasing railroad and steamship tickets; waiting in line at box office for tickets; securing rain coats, umbrellas and rubbers; escorting ladies to and from theatres, etc., securing keys that have been left at home; substituting during absence of regular office boy; delivering automobile parts to stranded automobilists; acting as door attendant at receptions, weddings, etc.; calling for garments at dressmakers, cleaners, tailors, etc.; purchasing and delivering lunches in cases of emergency; calling at railroad and steamship terminals for hand baggage; purchasing and delivering flowers, confectionery and other gifts; securing eyeglasses that have been forgotten and are needed; escorting children to and from school, places of amusement, etc.; calling for and carrying books to public and circulating libraries; attending office for lawyers, doctors, and others during lunch hour, etc.; delivering hand baggage at railroad and steamship terminals and checking same. There is a case on record where a boy was called to tighten the laces of a fat lady's corset.

The Wireless Operator's Future.*

BY WILLIAM A. WINTERBOTTOM.

In the early days of wireless, shortly after Mr. Marconi had successfully demonstrated his ability to communicate thirty miles without wires, the call came for wireless operators. Conditions in England then, as now, were somewhat different to those existing in the United States. The telegraph service being a government monopoly, telegraphers were more or less bound to their civil service or government positions, and the idea of severing relations to engage in such a new and untried profession as wireless, in the hands of a newly formed Marconi Company, was not received with great enthusiasm.

Advertisements were inserted in the provincial newspapers for telegraphers to operate wireless apparatus, and a few venturesome spirits grasped the opportunity. To-day their names are found high in the executive offices of the many Marconi companies.

The salaries offered to Marconi operators in those days were not magnificent—£1 (\$5) per week, with an extra allowance of fifty cents per day for shore service—"but," as the local superintendent urged, "what opportunities to travel and see the world! The finest Atlantic liners to travel upon!"—for in those days few steamers were fitted. "Wonderful opportunities for ambitious youths," and similar encouraging remarks were repeatedly emphasized. And all of these were undoubtedly true, although not particularly effective, as the small salary was often the stumbling block to any but young men. It is very different now; even salary conditions have improved wonderfully since those early days, and we now find the American Marconi Company paying its ship operators from \$25 to \$60 per month, depending upon the length of service and ability.

Many young men deeply interested in wireless progress still hesitate, however. Says one: "My heart and soul are in wireless, my happiest hours are spent with my home-built equipment, and every improvement holds me closer to the art, but, while I would enjoy a year or two at sea, some day I should prefer to settle down on terra firma. While ships sail the seas, wireless men must accompany them, and I therefore seek a living in other directions and ride my wireless hobby during spare time."

Says another—and I am rather inclined to believe he is a shortsighted young man: "What future is there in wireless for me? I cannot afford to spend the best years of my life at sea in the hope that some day I might be promoted to a land station or possibly to a position in the home office. The chances are too much in favor of remaining a ship operator." And so he gives his best thoughts to wireless telegraphy as a pastime instead of seriously considering its advantages as one of the progressive and promising professions available to-day.

Let it be my privilege to remove some erroneous views.

*Reprinted from *The Wireless Age*.

Wireless telegraphy has been making wonderful progress within the past year or two in its real sphere which, as this magazine's readers know, is long-distance telegraphy in competition with older and more expensive methods. The best informed men in the wireless profession agree that the future of wireless is in long-distance communication. The ordinary wire and cable means of communication have almost doubled each succeeding decade. The field for an additional, more rapid and more economical agency is therefore limitless.

Already the first trans-oceanic link between Great Britain and Canada is working with wonderful regularity and surprising accuracy. The public is gradually becoming aware that Marconi service is "just as good and far cheaper" than cable service.

We also find the first link in the Marconi trans-Pacific chain—California to Hawaii—operating with the precision of a landline without the constant fear of losing the conductor. The Japanese Government is now testing with the Marconi high-power duplex stations in Hawaii over a distance of 4,000 miles and congratulatory messages have already passed between the Japanese Imperial officials and the Marconi Company's executives. The service will be opened to the public very shortly, and the urgent cry is for competent operators.

Stations costing millions of dollars have been erected at Belmar and New Brunswick in New Jersey, to communicate at high speed with similar stations in Great Britain, and equally powerful stations are located at Chatham and Marion, in Massachusetts. The latter stations will communicate with Stavanger, Norway, and Sweden. Denmark and Russia will be added to the circuit. These stations, as is generally known, are awaiting the cessation of European hostilities before commencing operations. The Massachusetts and New Jersey stations are now being connected by wire with the Marconi main telegraph office at 42 Broad street, New York, where a large staff of expert operators will be required.

Other high-power wireless stations undoubtedly will be built in other parts of the American continent. We may expect to see the West Indies and that wonderful field south of the Panama Canal dotted with busy Marconi stations.

Each of the stations mentioned will require a large staff of operators for continuous service. Supervisors and superintendents will be needed. Engineers and their assistants will find excellent positions awaiting them.

Conditions of living at high-power stations are the last word in comfort and convenience. Most of the stations are situated near to some large civic center and a regular trip to town or theatre is quite possible. Naturally, the stations are in close proximity to some body of water where bathing, fishing and boating afford much diversion. Tennis courts are provided and there is ample ground available for baseball diamonds and football fields. Even golf might not be put out of the question at some of the stations.

The hotels attached to these huge plants are objects of wonder to all visitors. Operators are given

well-furnished bedrooms with adjoining baths; there are lounging and music rooms holding player pianos and victrolas with splendid selections of records, besides a well-stocked library which circulates through all stations. Smoking rooms are fitted with restful lounging chairs and on many winter nights these are drawn up to form a cosy half circle about the large open fireplaces. The dining rooms are run solely for the convenience of operators and service may be had by those coming off duty at any hour of the day or night. Billiard tables are found very popular, and bowling alleys in the hotel basements are promised.

We also find that high-power men, on account of continuous duty, are rewarded with four weeks' vacation, with full pay, and sick pay while unable to perform active duty. A benefit association has recently been organized providing protection to families in case of death.

"How different," comments the young wireless operator, "to life in small wooden shacks that a few years ago might have passed for barns but for the tell-tale aerial. Have salaries improved in the same ratio as the living conditions?"

The salaries have kept pace with the increasing importance of the traffic handled. Young operators, who are competent, are now enrolled for high-power work usually at \$90 per month, increasing according to their ability and length of service, to \$120; and more lucrative positions are numerous.

"But how may I become sufficiently expert to hope for such desirable positions?" asks the youth, now more interested than ever.

Such positions are, of course, not secured without hard work. Only the ambitious and most expert may hope for heavy assignments. "Holding down" a continuously busy circuit at high speed, handling practically nothing but difficult code and cipher language, is not to be compared with most ship assignments. Few steamers produce sufficient traffic to call for the steady grind of a long-distance circuit, where wasted minutes are calculated in lost dollars.

High-grade men competent to fill these new positions are not numerous. Special training is essential, and it is for this purpose that the Marconi Company recently opened an additional school. Here the practical side of telegraphy is thoroughly taught. Graduates to this school must first have completed the regular wireless course as taught in the Marconi school at present. A government certificate is necessary. Many of the students complete their wireless course, secure a license, and are assigned to the marine division. During the days that their ships are in port they will be found attending the new school, becoming familiar with long-distance methods, so that when the call for high-power station men is made they will be capable and ready to secure advancement. The secondary course, it is estimated, will occupy about one year. Students in this class are first examined in such subjects as geography, arithmetic, handwriting, orthography, composition. If this examination is successfully passed, a medical certificate is required,

indicating the applicant's general good health and fitness for foreign service.

Young men who formerly hesitated over the question of wireless as life work are now preparing themselves for the many lucrative positions to be filled with the opening and extension of the Marconi long-distance services.

New Book.

"Chained Lightning" is the title of a book written by Ralph Graham Taber, and just issued by the Macmillan Company, New York. It is a story of adventure of a railroad telegrapher in Mexico and affords delightful reading for telegraphers. This knight of the key did not go to the land of the Incas as a tourist or as an adventurer, but as a real, practical telegrapher, and he tells his experiences in a way that will give much enjoyment to brother operators. The story is well written, and extremely interesting, and incidentally reflects the life and character of the Mexican people. It is written in the style of narrative usually employed when operators talk among themselves—that telegraphic style of conversation that has a boldness and beauty of its own.

The contents of the book are divided into five parts, with characteristic headings, viz.: Key and Sounder; Sparks and Larks; Shocks and Flashes; Pluck and Luck; The Complicated Circuit. Each part is subdivided into chapters with a heading of distinctive telegraphic flavor. Several excellent views of places of note in Mexico are presented in the volume. Every telegrapher, young or old, in active service or out of it, will derive much pleasure in reading this excellent story.

The price of this book is \$1.25 per copy, and copies may be obtained of TELEGRAPH AND TELEPHONE AGE, 253 Broadway.

The Code Word "Scotus."

The code word "Scotus" found in telegraph code books has been the subject of considerable discussion among telegraphers employing code in the transaction of business for newspapers, and has subjected many operators to embarrassment, criticism and ridicule by permitting the construction to escape his diligence and in transcribing it as transmitted, passing the telegraph editor, compositor, proofreader and finding its way into print in its original form of scotus, instead of "Supreme Court of the United States." It is not generally known that the contraction spells the name of a celebrated British logician, Duns Scotus, who lived in the thirteenth century.

Mr. W. F. Muth, for many years past in the brokerage business at Newark, N. J., but previous to twenty years ago a prominent Philadelphia operator, in remitting to cover his subscription for another year, writes: "This is the thirty-fourth year that I have remitted to cover subscription to your publication." Mr. Muth was agent for this years ago and is one of its original subscribers.

The Morkrum Printing Telegraph System.

[Continued from page 576, December 16, 1915.]

Referring to Fig. 7; the five contact pins are connected to the local battery and the contact points are connected to the coils of the relay pole-changers.

When speaking of front and back contacts of relays it is understood that the front contact is the one against which the tongue is held when the relay is operated. The back contact is the one against which the tongue lies when the relay is unoperated.

The back contacts of the relay pole-changers are connected to the negative pole of the local battery through the coil "D," the purpose of which is to prevent a short circuit in the local battery through

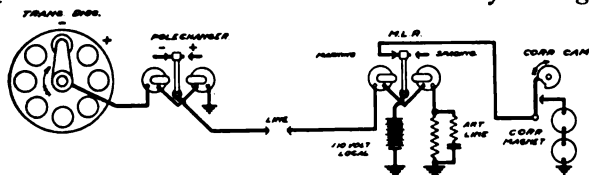


FIG. 6.—SYNCHRONIZING CIRCUITS.

the points of the relay pole-changers. The front contacts are connected to the positive pole of the local battery.

When the transmitter brush is on the top button, there is a circuit from the negative pole of the local battery through coil "D," through the coils of the main-line pole-changer, thence through coil "C" to the positive pole of the local battery. This current will move the armature of the main-line pole-changer to the left and will send out negative current to the line.

When the brush is upon the next button in the di-

Morse set, and the left-hand one is a ground switch for use in centering the main line relay on the line. When the Morse switch is thrown to the left, the coils of the main-line pole-changer are connected to the tongue of the Morse pole-changer. The Morse pole-changer has the positive and negative poles of the local battery connected to its contact points, and will control the main-line pole-changer by reversing the direction of the current through its coils in the same manner as the transmitter brush controls it.

There is a 2,000-ohm coil bridged across the correcting magnet to prevent its discharge from burning the contacts of the printer relay.

The motor which drives the shafts must maintain a constant speed, so it is equipped with a fly-wheel and governor. There is a 125-ohm resistance unit in series with the motor to reduce the current. The governor is of the fly-ball type. When revolving, the pull of the governor weights tends to open the governor contacts. The speed at which the contacts are opened is determined by the position of the adjusting screws. The circuit from the local battery to the motor passes through the contact points of the governor and there is a 500-ohm resistance unit bridged across these contacts. When the governor contacts are opened the 500-ohm resistance is put in series with the motor, which immediately slows down. The slowing down of the motor allows the contacts to again come together, cutting out the 500 ohms. The motor speed will then increase, and cause the contacts to open again. Thus it will be seen that the speed will be kept constant by the opening and closing of the governor contacts. If

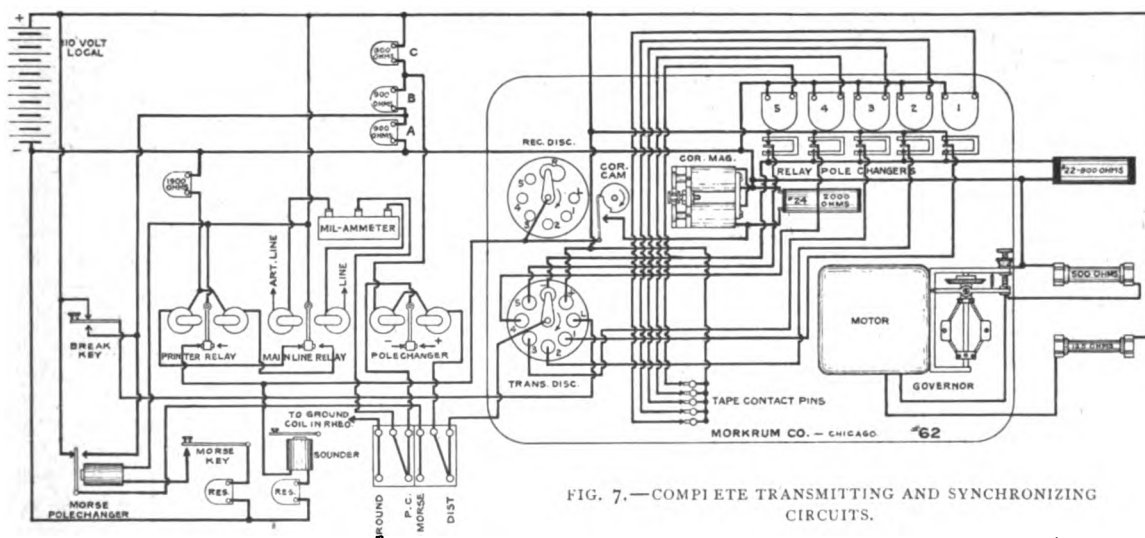


FIG. 7.—COMPLETE TRANSMITTING AND SYNCHRONIZING CIRCUITS.

rection of rotation, the circuit is from the positive pole of the local battery through the coils of the main-line pole-changer, thence through coils "B" and "A" to the negative pole of the battery. Since the current is flowing through the coils of the main-line pole-changer in the opposite direction, the armature will move to the opposite side and will send out positive current to the line.

There are two three-point switches on the table. The right-hand one is used for throwing in the

the speed tends to increase, the contacts will be held open longer. If it tends to decrease, the contacts will be held closed longer. This allows a wide variation of voltage, and also changes of load, without a change in the speed.

The main-line relay armature is controlled by the transmission from the distant end. Instead of receiving the signals direct from the main-line relay, the main-line relay is made to operate a printer relay whose armature opens and closes a circuit

from the battery to the receiver brush. When the main-line relay receives a negative or marking signal from the distant end, the printer relay closes the battery circuit to the receiver brush. When the main-line relay receives a positive or spacing signal, the printer relay will open this circuit.

There are seven buttons on the receiver disc. The large double button is the restoring button. The next button in direction of rotation is connected to the relay which controls the signal lamp, the next five buttons in order are connected to lock relays, 1, 2, 3, 4 and 5 in the lock bank.

The different letters and signals on the printer are made by operating different combinations of the five locks. It will be seen from the diagram that the tongue of each lock relay is connected to its own coil and the front contact is connected to the battery through the contacts of the selector break relay. When a lock relay operates, the battery from the contact flows through its own coil and locks the relay in operated position until the

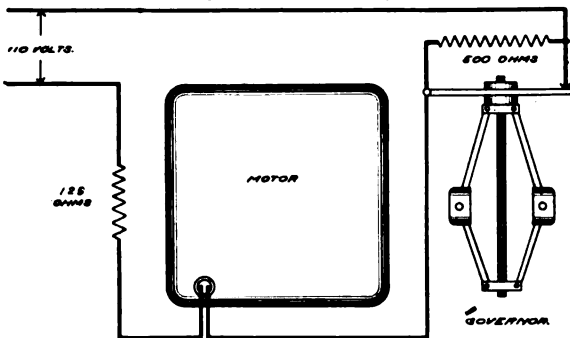


FIG. 8.—MOTOR GOVERNOR CIRCUITS.

selector break opens, cutting off the battery. Lock five is locked with battery through the main break in the printer so in case it is operated it is held locked until the main break opens. The lamp signal relay is operated in the same manner as the lock relays. If the distant end is sending out marking current when the receiver brush is on the lamp button the lamp relay is operated and will lock battery from the selector break to the signal lamp, which will remain lighted until the selector break opens.

The lock relays in the bank are connected to the corresponding plate relays in the printer through the contacts of the divide with the exception of the fifth which goes direct to P-5 in the printer. When the divide relay is operated and all its contacts opened, the printer is cut off entirely from the first four lock relays. This is done in order to allow the bank to pick up the next combination over the line and store it until the printer has completed the operations of rotating and striking or any of its other various functions.

Since the lock relays control the printer actions, we will consider first how the different combinations are set up in the bank.

Tracing the operations which take place while a combination is being selected. Starting with the brush on the first button, if the transmitter at the far end is sending out negative current the printer relay will close the circuit from battery to the re-

ceiver brush, then through the first button on the disc, and from there to the magnet of the first lock relay. This magnet will pull over the armature of the relay and lock itself in operated position as previously described. If the transmitter at the distant end is sending out positive current the printer relay will open the battery circuit to the receiver brush and the first lock will be left unoperated.

The receiver brush will now pass to the second button. If the transmitter at the distant end is now sending out negative current the circuit from the battery to the receiver brush and the second lock relay magnet will be closed and the relay will be operated and will lock itself in. If the transmitter at the distant end is sending out positive current the printer relay will open the circuit from the battery to the receiver brush and the second lock will be left unoperated. In this way, tracing the circuits when the brush is on each button, it will be seen that if the transmitter at the distant end is sending out negative current the printer relay will close the circuit from the battery to the receiver brush and the battery will flow through the button to the lock relay magnet and operate the relay. If the transmitter at the distant end is sending out positive current the printer relay will open the circuit from the battery to the receiver brush and no battery will flow into the lock relay magnet and the relay will remain unoperated.

When the fifth interval is negative the fifth relay will be operated and will lock itself in the same manner as the other locks, except that its locking current is supplied through the main break in the printer instead of the selector break.

After leaving the fifth button the brush passes over the restoring button. The circuit from the battery to the receiver brush is always closed by the printer relay at this time due to the fact that

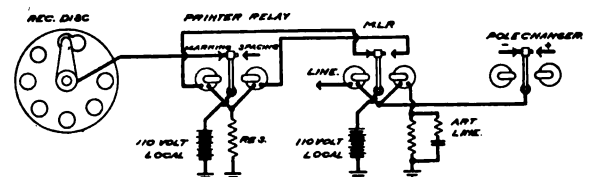


FIG. 9.—OPERATING CIRCUITS OF MAIN LINE. RELAY AND PRINTER RELAY.

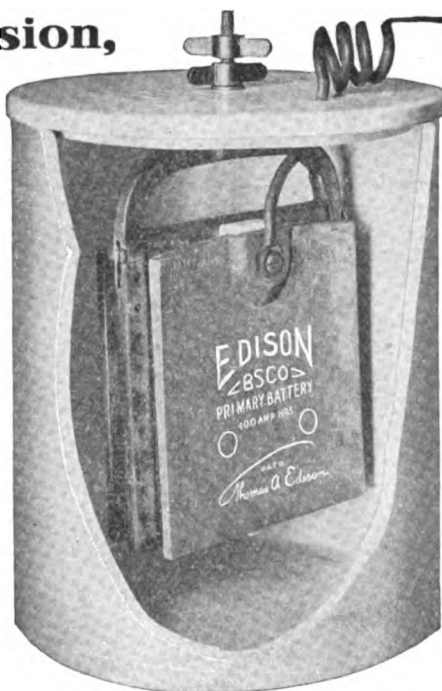
the button after the fifth in the transmitter disc is permanently connected to negative.

One branch of the circuit from the restoring button passes through the magnet of the selector break relay. When this magnet is operated it opens the selector break and cuts off the locking battery from the first four lock relays, restoring them all to normal unoperated position. The fifth lock being locked by main break battery does not restore until the operation of the main break in the printer.

Another branch of the circuit from the restoring button connects the battery to the divide relay magnet and drum magnet in the printer through the right hand back contact and double tongue of the divide relay. (To be Continued.)

Clear Transmission, Always Necessary, Warrants Use of the Highest Grade Battery

A low internal resistance battery that will not polarize, and maintains constant voltage, is sure to give better results in telephone work than a set of cells whose voltage constantly drops when on discharge, or in which the voltage is high or variable.



Type 403 400 Ampere Hours Capacity

The Edison Primary Cells

maintain a lower uniform internal resistance than any other primary type; they furnish constant voltage and do not polarize at normal discharge rates; the 400 ampere hour size has a life greater than twenty single sets of dry cells and they require no attention between recharges, even though the service is such that a period of years is required to consume their capacity.

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What Friends Say of this Journal.

Mr. A. J. Collier, manager, Western Union Telegraph Company, Bridgeport, Conn., in remitting to cover his subscription for twelve months writes: "TELEGRAPH AND TELEPHONE AGE sparkles both with interest and knowledge."

Mr. William J. Smith, manager Western Union Telegraph Company, Seattle, Wash., in renewing his subscription for another year writes: "The AGE helps me keep in touch with my old friends and puts me in touch with new ones."

Mr. Frank Kitton, of the office of the electrical engineer, Western Union Telegraph Company, New York, one of the best-known engineers in the country, in renewing his subscription to this publication for the thirtieth consecutive year, has this to say: "I thank you for renewing my subscription to the AGE and I am pleased to remit to cover, hoping I may have this annual pleasure for many years to come. I certainly have enjoyed your paper for some years now."

Mr. W. A. Stallings, manager Postal Telegraph-Cable Company of Texas, Beaumont, Tex., in response to a request from Mr. W. E. Griffiths, one of our Dallas, Tex., agents, to subscribe for this publication, has this to say: "I am already a subscriber. No one can afford to be without TELEGRAPH AND TELEPHONE AGE unless he wants to be a back number. Express to the publisher our great admiration and appreciation of the AGE, which is always a welcome visitor at our doors."

The Eastern Telegraph Company, Limited

Eastern Extension, Australasia & China Telegraph Company, Limited.

Eastern & South African Telegraph Company Limited.
Direct Spanish Telegraph Company, Limited.
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TELEGRAMS for

Australasia, China, Japan, Dutch Indies, Africa, India, Spain, Portugal, the Mediterranean and South America.

"VIA EASTERN."

KERITE



**Another year added to the
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KERITE INSULATED WIRE & CABLE **COMPANY**
NEW YORK CHICAGO

THE RAILROAD.

A RAILROAD FAMILY.—Mr. W. T. Swem, an operator for the Pennsylvania Railroad at Trenton, N. J., states that railroad and telegraph service in the Swem family has been almost as long as the life of the locomotive. More than ten of its members have spent their lives in work on the railroad. His uncle, John T. Swem, helped to unload the cars dragged by the old "John Bull" locomotive when it arrived at the Bordentown, N. J., wharf on September 4, 1831, on her first trip over the Camden & Amboy Railroad, eighty-four years ago.

RAILROADERS' AND TELEGRAPHERS' AID SOCIETY.—At the annual meeting and banquet of the Railroaders' and Telegraphers' Aid society held at Cleveland, Ohio, December 14, the following officers were elected: A. J. Black, Postal Telegraph-Cable Company, president; H. J. Murrin, Western Union Telegraph Company, first vice-president; S. J. Ryan, Big Four, second vice-president; A. J. Freeh, New York Central, secretary; J. H. Cox, Cleveland Railway Company, treasurer. The directors named were: E. M. Crane, Nickel Plate; P. T. Thornton, Western Union; Charles Gibbons, New York Central; S. M. Williams, Postal; W. A. Ladd, Western Union, and N. B. Murphy, New York Central.

Association of Railway Telegraph Superintendents.

The next annual meeting of the Association of Railway Telegraph Superintendents will be held at St. Paul, Minn., June 20, 21 and 22. This meeting will be the thirty-fifth annual gathering held by the association, which was organized November 20, 1882, for the advancement of the efficiency of the telegraph, telephone and other electrical departments of the railroad service.

The officers for the present year are: President, E. C. Keenan, Chicago; first vice-president, L. S. Wells, New York; second vice-president, M. H. Clapp, St. Paul, Minn.; secretary and treasurer, P. W. Drew, Chicago, Ill. Eastern Division chairman, W. H. Potter, Washington, D. C.; Western Division chairman, F. T. Wilbur, Chicago.

The committee of arrangements for the next meeting is actively at work on the plans, and a programme of extraordinary interest is promised.

MUNICIPAL ELECTRICIANS.

DES MOINES, IOWA.—The fire alarm system at Des Moines, Iowa, is part of the fire department and is under the supervision of Mr. E. C. Hodgson, superintendent of fire alarms.

NEW FIRE ALARM STATION IN SAN FRANCISCO.—A new central fire-alarm station has recently been put in service at San Francisco, Cal. The cost of the structure and equipment was \$85,000.

TEMPLE, TEX.—A new fire alarm system is being installed at Temple, Tex. Twenty-five signal boxes will be placed in the business section. The work is being done by the Gamewell Fire Alarm Telegraph Company.

OBITUARY.

B. J. KEEGAN, aged forty-three years, formerly an operator at Cincinnati, Ohio, but for the past few years in another line of business at the same place, died December 19.

JEFFERSON HERRICK, aged sixty-nine years, manager of the Atlanta, Ga., office of the Western Union Telegraph Company in the seventies, died in that city on December 24. He retired from the telegraph service many years ago.

WILLIAM A. CONNER, first vice-president and director of the Standard Underground Cable Company, Pittsburgh, Pa., and of the Standard Underground Cable Company of Canada, Limited, died at Perth Amboy, N. J., December 6.

W. C. ANDREWS, aged forty-two years, advertising manager for the Edison Storage Battery Company, Orange, N. J., and well-known in electrical journalism a few years ago, died of strychnine poisoning in New York, December 21. He was an instructor of Columbia University at one time.

GEORGE A. REDMAN, aged sixty-eight years, an old time telegrapher and a pioneer of the electric light and telephone business in Rochester, N. Y., died in that city on December 9. He was a native of New Orleans, and entered the telegraph service as a messenger in Rochester for the New York and Albany Telegraph Company in 1861, remaining with the successor company, the Western Union, until 1882. He founded the American District Telegraph Company, and the Edison Telephone Company, and was one of the organizers of the United States Electric Light Company, now the Rochester Electric Light Company. He held positions at various times in other electrical enterprises in Rochester.

W. H. DOHERTY, aged fifty-one years, a former well-known telegrapher and at one time manager of the Albany, N. Y., Western Union office, died suddenly at Wilmar, Minn., October 16 last, while enroute to San Diego, Cal., where he was going for the benefit of his health. Mr. Doherty resided in Watauga, S. D., and was vice-president of the Watauga state bank at the time of his death. He was one of the settlers of Lemmon, S. D., and was very prominent in business affairs in that place, being postmaster for the four years between 1910-1915. Mr. Doherty was author of a series of articles on telegraph bookkeeping, written especially for this paper some years ago, at the time he was manager of the Greenwich Street, New York City office, for the Western Union Telegraph Company. These articles proved very popular and made Mr. Doherty well-known throughout the country as an author on expert bookkeeping. Mr. Doherty was transferred from Milwaukee to New York in 1902.

TELEGRAPHS OF INDIA.—The telegraph system of India was extended 2,000 miles during the year 1914-15, according to the annual report of the posts and telegraphs of India. During the same period 16,000,000 telegrams were transmitted.

Construction and Repair of Telegraph Lines.

(Continued from page 530, November 10.)

All braided or covered aerial cables must be suspended on a messenger wire by the use of a spinning-jenny, excepting in special cases where it may be desirable to use non-inflammable material to support the cable, or excepting conditions where it will be advantageous to use the hooks made of No. 6 galvanized iron wire, with three-ply pure American hemp, thoroughly saturated with pine tar, or best grade of hambroline, for the suspension loop on the cable. Care must be taken that the hooks are completely closed to prevent them from jumping off the suspension wire. For hanging cable with a spinning-jenny the best quality of three-ply hambroline should be used, and it should be thoroughly greased before being wound on the jenny. A piece of raw tallow rubbed over the hambroline is very satisfactory for this purpose, and permits it to pay out freely and smoothly when the jenny is being drawn over the messenger wire and cable. A jenny of a size best adapted to the size of the cable being suspended should be used. If the bore of the jenny is too large the cable will be suspended too far from the messenger wire.

Lead covered aerial cables must be suspended from the messenger wire by standard aerial rings, except on elevated railroads or bridges where the vibration of passing trains is liable to injure the cable at the point of metal contact. In all such places the lead cables should be suspended from the messenger wire by tying the cable to the messenger wire, using four to six turns of three-ply hambroline for each tie or by use of S hook and three-ply pure American hemp or best grade of hambroline at intervals of eighteen inches or less as the weight of the cable may require.

The messenger wire must be securely attached to the side of the poles by suitable cable hangers or by jay bolts attached to the cross-arms. The messenger wire must be grounded. This should be done by connecting it with each pole lightning rod. In no case must the distance between grounds on messenger wires exceed one-quarter of a mile. On the outside of buildings porcelain knobs must be used for securing cables to the walls, ceilings, etc. Porcelain or some other material approved by the electrical department must be used where cables enter buildings or pass through walls or partitions. Wire staples or wooden cleats of any description must not be used for fastening cables or wires to the walls. Standard cable boxes approved by the electrical department will be used. No. 14 B. & S. braided wire as specified by the electrical department must be used for connections between the main line and cable boxes, and such connections must be soldered to the main line. Acids must not be used on copper wire. A suitable soldering flux will be furnished on application. All cables should be connected up by tracer, and the numbering must be consecutive whether one or more cables are used. A three-inch sample of each piece of new cable must be sent to the superintendent of construction promptly, giving exact length of cable used in each place and the number of conductors.

Foremen are expected to report defective material and tools to their superintendent by letter stating anything that they may know which may be of interest or advantage, and whenever practicable will send a sample with their communication.

Foremen must bear in mind that it takes time to fill requisitions. Material or tools should not be ordered by telegraph except in cases of emergency.

When fences have been disturbed or destroyed, the foreman must see that they are properly replaced without delay.

When a foreman has reason to believe that a serious storm has passed over the territory adjacent to his work, he must put himself in communication with the nearest district superintendent or wire chief and follow his instructions, advising the superintendent of construction at the first opportunity as to the movements of his gang. Should the foreman be entirely cut off by wire trouble, he will exercise his best judgment as to the disposition of his men for the purpose of restoring communication.

Forms for reporting the sale or transfer of copper wire released from service may be secured from superintendents of construction. These forms must be accurately filled out in detail and promptly forwarded to the superintendent of construction. Special reports by letter must be forwarded promptly by the superintendent of construction of all other material released from service.

In reporting wire, give kind of wire, size of wire, exact weight, number of coils of each kind of wire.

In reporting cables, give kind of cable, number of conductors, total number of feet, number of feet on each reel, number of reels on which cable is placed.

If more than one piece of cable is placed upon the same reel the reel must be tagged so as to show plainly the number of feet in each piece upon it and the order in which the pieces are placed upon the reel. The report must also give this information.

The cable known to be defective must not be placed upon the same reel with good cable where it is possible to avoid doing so. Should it be necessary to do this on account of shortage of reels, the matter must be reported to the superintendent and the reel tagged so that the defective cable can be identified. In such cases the defective cable should be the outside section.

If stored or shipped, state where and how.

Other material of value sold or transferred must be similarly reported, giving full details. No material of any kind must be sold or otherwise disposed of without the authority of the general superintendent.

(To be Continued.)

Mr. T. C. Ashcroft, vice-president of the Security Bank and Trust Company, Memphis, Tenn., formerly and for many years identified with the Associated Press at New York, Memphis and other points, in renewing his subscription for another year, writes: "Thank you for continuing my subscription to the AGE. I renew old acquaintances with every issue."

F. M. McClintic.

Mr. F. M. McClintic, one of the best-known telegraphers in the United States, who has had a wide experience in newspaper and business circles, will be identified with this publication, beginning January 1. Mr. McClintic will take care of the telegraph, the telephone and the railroads, devoting his time to write-ups and other business covering these interests, also soliciting advertising and subscriptions. He is so well and favorably known to the fraternity that he hardly needs an introduction. He prefers to let his work speak for him.

THE ASSOCIATED PRESS.

Mr. Frank H. Trickle, for the past three years division traffic chief of the Eastern Division, with headquarters in New York City, was transferred to a corresponding position at the head of the Southern Division, Washington, D. C., on January 1.

Mr. Trickle entered the telegraph profession in 1888 and was employed by the old United Press at Cincinnati, Ohio, engaging with The Associated Press at St. Louis in 1894. From St. Louis he was transferred to Galveston, Dallas, Memphis, Denver and New York, in all of which places he was rated as one of the best operators in the service. After serving five years as chief operator of the Eastern Division he was appointed division traffic chief, upon the creation of that position in 1912.

Mr. Wm. Flanagan, for several years night chief operator in the New York office of The Associated Press, will succeed Mr. F. H. Trickle as Eastern Division traffic chief.

Mr. C. J. King, who has been in charge of the Southern Division of The Associated Press for the past few years, has been transferred to Louisville, Ky., at his own request.

Mr. J. A. Bates has been made night chief operator of The Associated Press, New York, succeeding Wm. Flanagan, promoted to division traffic chief.

WALL STREET GOSSIP.

Wall Street employes have shared more liberally in the profits of the enormous business done by Stock Exchange firms during the past year, than ever before. Bonuses, accompanied by advances in salary, have been freely distributed by a majority of the houses.

Mr. J. B. McKeever, of Harris Winthrop & Co., 15 Wall Street, returned to duty on Monday, December 27, after an attack of la grippe, but was compelled to leave for Washington at once on receipt of a telegram from that city announcing the death of his mother.

PAINE WEBBER AND COMPANY, of Boston, Mass., a well known brokerage house, have opened an office at 25 Broad Street, New York, where they expect to employ several telegraph operators.

INDUSTRIAL.**Western Electric Developments in 1915.**

Among the developments of telephone apparatus by the Western Electric Company during the year 1915 were a more flexible interphone system for apartment houses, which is arranged for service between vestibule, apartments, janitor and tradespeople, also a flashing ring-off and recall signal for use with magneto switchboards, to prevent "hang-up" troubles and increase operating efficiency.

An all-metal switchboard for use on ships of the navy has been designed and put into operation. It is of the central-battery type with combined jack and signal equipment.

A new type of magneto telephone has been produced to meet the demand for a more compact and serviceable rural telephone.

In railroad apparatus, the loud-speaking telephone for railway dispatching work has been improved, giving distinct enunciation and large volume. A number of these instruments have been installed during the year on many of the lines of important railroad systems, where they are doing efficient work.

An electro-magnetic circuit-breaker has been developed to replace the slower-acting fuses used on train dispatching circuits to limit the supply of battery current going to the telephone and telegraph instruments.

A booth switch for use on telephone booths placed at railroad sidings has also been brought out. The switch is connected to the hasp of the booth lock so that it cuts out the siding telephone only when the door is locked. It does not cut out when the door is closed behind the man who is using the telephone.

Improvements are also noted in keys, protectors, forest-service hand-sets, police signal lamps, navy-type hand-sets, loud-ringing bells, and all through the range of household appliances, and miscellaneous devices.

MR. C. V. BARFIELD, the winner of the first prize in the mechanical transmission contest at the San Francisco telegraph tournament, August 27 and 28, 1915, has been presented by Mr. J. E. Albright, general manager of the Vibroplex products with a beautifully finished Vibroplex suitably inscribed.

A New Feature.

Beginning with the next issue, and continuing indefinitely, a page or more of space will be devoted to a brief sketch of the career of some telegrapher or telegraphers who have "made good." The page, we hope, will prove an inspiration to others who are following in the steps of men who began life at the key and have won their way to success through persistent determination and, in many cases, hardship.

THE TELEGRAPH AND TELEPHONE LIFE INSURANCE ASSOCIATION has levied assessment 596 to meet the claims arising from deaths of H. B. Hart at Tate Ga.; F. A. Armstrong, Cincinnati, Ohio;

C. F. Beesan, Rosedale, Kan.; M. R. Cockey, New York; H. C. Gresslin, Brooklyn, N. Y.; G. L. Lang, Chattanooga, Tenn.

LETTERS FROM OUR AGENTS.

NEW YORK WESTERN UNION.

William M. Stewart, aged fifty-three years, an operator for this company, died in Brooklyn, N. Y., December 17. He was born in Brookville, Ont., and had been a resident of Brooklyn for thirty-five years. He is survived by his wife, two sons and two daughters.

PITTSBURGH WESTERN UNION.

A. W. Boyle, multiplex attendant in the automatic department, Pittsburgh, died November 8, 1915. He was widely known. Unfortunately, he had no insurance on his life and over \$100 was collected among his associates and presented to his wife.

Miss T. M. Huddleston has been appointed manager at Alderson, W. Va.

Mr. Valca Dick has been appointed manager of the newly opened office at North Fork, W. Va.

Mr. C. J. Thompson has been appointed manager at Thurmond, Va.

Mr. H. D. White, who has been acting manager at Logan, W. Va., has been appointed manager of the office.

CHICAGO WESTERN UNION.

One of the Western Union operators was so jubilant when he received his notice that he would be granted a two weeks' vacation each year, was heard to remark, that he hoped that the liberality of the company would be extended to cover the employees who were recently pensioned.

Charles J. Anderson died December 19, at the Presbyterian Hospital in this city. Mr. Anderson entered the service as service clerk some time in the eighties, and leaves an excellent record as an operator. He also made good records in various departments of the Chicago office.

The Testing and Regulating Efficiency Club of the Chicago Western Union office, held a dinner at the Boston Oyster House, Tuesday evening.

Rubber Telegraph Key Knobs.

No operator who has had to use a hard key knob continuously should fail to possess one of these flexible rubber key caps, which fits snugly over the hard rubber key knob, forming an air cushion. They render the touch smooth and the manipulation of the key much easier. Price, fifteen cents. J. B. Taltavall, TELEGRAPH AND TELEPHONE AGE, 253 Broadway, New York.

December 7. Among the club's invited guests were: Mr. T. W. Carroll, division traffic superintendent; Mr. E. T. Jones, chief operator; Mr. A. J. Fuller, assistant chief operator; Mr. C. F. Hauth, late night chief operator; Mr. F. B. Ford, of the claim department; Messrs. Willoughby and Parrington, traffic supervisors; Mr. C. F. Linley, chief of check service and Mr. Heininger, of the dispatching bureau.

After dinner was served, and talks by Messrs. Carroll and Jones were listened to, social chairman Matthews turned the meeting over to president Weems, who reviewed the work of the club during the past year. Some interesting and humorous papers by Messrs. Johnson, Dodge, Fried, Kinder and Frankfield, pertaining to testing and regulating work, were read and followed by speeches by Messrs. Carroll, Webber, Heininger and Ford, complimenting the force upon its record for efficiency, and commending the efforts of the club.

Remarks were also made by Messrs. Dodge, Hauth, Gill, Linley, Kennedy, Wilhoit and Frankfield.

The event was a most enjoyable affair from every standpoint and the spirit displayed was a demonstration of the harmonious co-operation prevailing throughout the office.

ST. LOUIS WESTERN UNION.

Mr. C. W. Frey, of the traffic department, New York, and W. W. Drew, traffic supervisor Western Division, Chicago, were recent visitors.

30TH ANNIVERSARY

Serial Building Loan and Savings Institution

President, . . . Ashton G. Saylor
Secretary, . . . Edwin F. Howell

Resources	-	-	-	\$900,000
Surplus	-	-	-	35,000

The Serial was established in 1885 by telegraphers and has faithfully served their interests as a

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You should have a savings account, but never will unless you begin NOW.

Western Union Building, 16 Dey Street, 9 a.m. to 5 p.m.
Postal Building, 253 Broadway, Room 1030, 2.30 to 4.30 p.m.,
every Friday, 15th and last day of month.
Telephone Building, 24 Walker Street, Room 1129, Daily
9 a.m. to 2 p.m.

Close at 1 p.m. Saturdays

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ESTABLISHED 1867

FOR ALL EMPLOYEES IN TELEGRAPH OR TELEPHONE SERVICE

Insurance, Full Grade, \$1,000; Half Grade, \$500; or Both Grades, \$1,500; Initiation Fee, \$2 for each grade

ASSETS \$350,000. Monthly Assessments at rates according to age at entry. Ages 18 to 30, Full Grade, \$1.00; Half Grade, 50c. 30 to 35, Full Grade, \$1.25; Half Grade, 62c. 35 to 40, Full Grade \$1.50; Half Grade 75c. 40 to 45 Full Grade \$2; Half Grade \$1.

M. J. O'LEARY, Sec'y, P. O. Box 510, NEW YORK.

Classified and Want Advertising Section

Advertisements will be accepted, for this department of the paper, at the rate of five cents per word.

THE AMERICAN TELEGRAPHER. A monthly magazine of railroad and telegraph tales. Jeff W. Hayes, editor. Price, \$1.00 per year. Address, American Telegrapher, 1822 East Morrison street, Portland, Ore.

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Our Subscription Department

This publication is prepared to handle subscriptions for any paper or magazine published. Our friends can hereafter look upon TELEGRAPH AND

TELEPHONE AGE as a clearing-house for all journals no matter where printed. Address and make remittances to TELEGRAPH AND TELEPHONE AGE, 253 Broadway, New York. Among the publications devoted to electricity which we make a specialty of are the following:

THE WIRELESS AGE, monthly, New York, price \$1.50 per year in U. S., \$2.00 to all other countries.

TELEPHONY, weekly, Chicago, price \$3.00 per year in U. S., Canada \$4.00, and all other countries \$5.00.

ELECTRICAL WORLD, weekly, New York, price \$3.00 per year in U. S., Canada \$4.50, all other countries \$6.00.

THE TELEGRAPH AND TELEPHONE JOURNAL, monthly, London, \$1.25 per year.

ELECTRICAL REVIEW, weekly, London, \$7.50 per year.

ELECTRICAL REVIEW, weekly, New York and Chicago, price \$3.00 per year in U. S., Canada \$4.50, all other countries \$6.00.

Marshall's Electrical Condensers

FOR TELEGRAPH, TELEPHONE, ELECTRIC LIGHT, X-RAY, EXPERIMENTAL AND WIRELESS SYSTEMS.

Sending Condensers for Wireless made to stand any voltage required. Standard Condensers a specialty. These Condensers are used in all Telegraph offices in America where Standard and ordinary Condensers are required. **CONDENSERS AND ARTIFICIAL LINES** for Submarine Cables and Land Lines. Send for Catalogue.

References: O. STRUBEI, Esq., Engineer Mex. Tel. Co., N. Y.
J. G. MURRAY, Esq., Electrician C. & S. A. Tel. Co., N. Y.

Address: WM. MARSHALL, 709 Lexington Ave., near 57th St., New York.

DISC TELEGRAPH RECORDS.—Diamond medal telegraph records are interesting and instructive. These are double Morse telegraph records; that is, they have records on each side of the disc, and can be used on any make of talking machine. There are eight discs in the set, sixteen lessons in all, and the lessons lead the student on by easy stages. The specimens of Morse sending are beautiful.

These double discs are for sale by TELEGRAPH AND TELEPHONE AGE, 253 Broadway, New York. Full set, \$8.00; single records, \$1.00 each.

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"We haven't enough traffic for such systems." "Very well; but you do need the Double Duplex (4 channel) Murray Multiplex with forked and series working. You do need to save labor and send your telegrams on free typewriter keyboards."

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ENGRAVINGS FOR SALE.—Photogravure pictures, suitable for framing of Dr. Alexander Graham Bell, inventor of the telephone; Theo. N. Vail, president, American Telephone and Telegraph Company, and Edward J. Nally, vice-president and general manager, Marconi Wireless Telegraph Company of America. Half-tone engraving of Edward Reynolds, vice-president and general manager, Postal Telegraph-Cable Company. Size, 8 x 11. Price 25c. each. Address and send remittances to TELEGRAPH AND TELEPHONE AGE, 253 Broadway, New York.

FOR SALE.—Snapper Sounders. Make a loud noise, the "click" being similar to telegraph sounders. Price, 25 cents each. Remit in postage stamps. Address, SNAPPER SOUNDER, care TELEGRAPH AND TELEPHONE AGE, 253 Broadway, New York.

FOR SALE.—Western Union Watch Fobs, price, \$1.00; Western Union Lapel Buttons, price, 50c., and Western Union Ladies' Brooch Pins, price, 50c. All these goods are beautiful in design, heavy gold plated, oxidized silver, with the Western Union Emblem, heavily gold plated. Address A. E. JOHNSON, care TELEGRAPH AND TELEPHONE AGE, 253 Broadway, New York.

PHILLIPS' CODE THOROUGHLY REVISED AND BROUGHT UP TO DATE. PRICE \$1.00

Mr. Eugene E. Bruckner, the well-known press operator now located at Spokane, Wash., has, under the authority of Walter P. Phillips and with the assistance of a number of officials and operators in the press service, thoroughly revised Phillips' Code, and the new edition was ready for delivery on June 1, 1914. Mr. Bruckner was considered by Mr. Phillips the most competent authority to undertake this important work, and so satisfactorily has the task been accomplished that the finished book has received the stamp of approval of the Associated Press, the United Press, the Publishers Press, and all other newspaper agencies, as well as the endorsement of press operators, well qualified to judge of the merits of the new book. A large number of officials and operators in the press service were also frequently consulted on the revision.

The new book was desirable for the same reasons that makes necessary a revision of scientific text books with the progress of each decade.

Thirty years ago, when Mr. Phillips first published his work, a large number of words were used that to-day are almost obsolete, and several hundreds of others, not provided for then, have come into general use. Provision must therefore be made for the newer modes of expression.

As indubitable evidence of this need, men who have joined the ranks of the press associations in recent years have found themselves wholly perplexed, and have been humiliated by apparent incompetence owing to their inability readily to interpret hundreds of contractions in constant use but not honored by Phillips' Code.

The whole object of the revision has been to promote greater accuracy and reduce memorizing to a minimum. Under the new system, an operator who knows the code for *Assist* does not need to know the specific contraction for *Const*, *Dest*, *Inset*, *Perist*, *Rest*, etc., for all are formed upon the same basis. Nor is it probable that the operator could make a mistake in their translation if, by force of sheer will power, he tried.

The price of Phillips' Code is \$1.00. Remit by post-office or express money order to

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CATALOG OF BOOKS ON THE TELEGRAPH, TELEPHONE, WIRELESS, ETC.

BATES, DAVID HOMER.—Lincoln in the Telegraph Office; Recollections of the United States Military Telegraph Corps during the Civil War; 432 pages; illustrated; \$2.17.

BRIGHT, CHAS., F.R.S.E., M. Inst. C.E., M.I.E.E.—Submarine Telegraphs; 800 pages; \$25.

CROCKER, F. B., AND WHEELER, S. S.—The Management of Electrical Machinery. Fully illustrated. \$1.00.

CROTCH, ARTHUR.—Hughes and Baudot Telegraphs; 83 pages; 41 illustrations. This is a practical description of these two systems of telegraphy which are in extensive use in England and on the Continent; devoid of mathematics and technicalities; a timely book for American student telegraphers; \$1.00.

DODGE, G. M.—The Telegraph Instructor. This volume, now in its fourth edition, is admirably designed for the student and beginner, for in explanation and illustration it is clear and profuse; 260 pages; \$1.00.

FINN, WM.—The Barclay Printing Telegraph System; paper cover, new edition July, 1915, 50 cents.

HERBERT, T. E.—Electricity in its Application to Telegraphy. Adopted by the English Post Office Telegraph Department. Fourth edition, 48 illustrations; \$3.00.

HOUSTON, E. J.—A Dictionary of Electrical Words, Terms and Phrases; 980 pages; 582 illustrations; \$7.00.

HOUSTON, E. J.—A Pocket Dictionary of Electrical Words; cloth, \$2.50.

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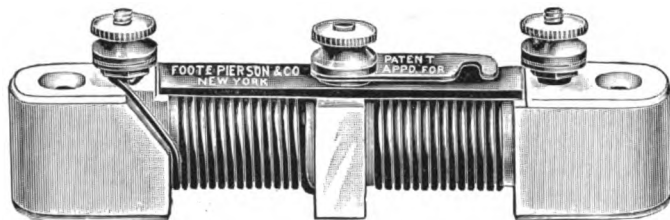
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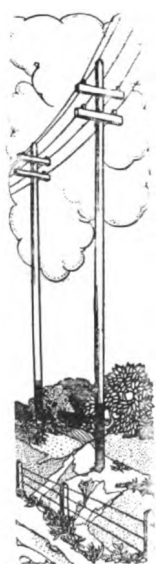
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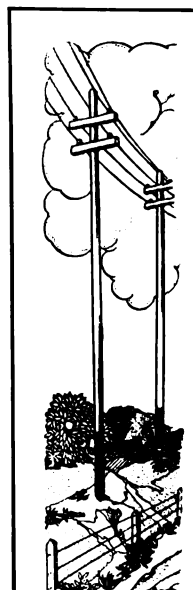
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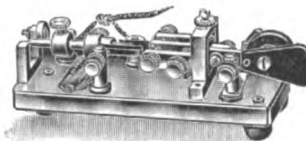
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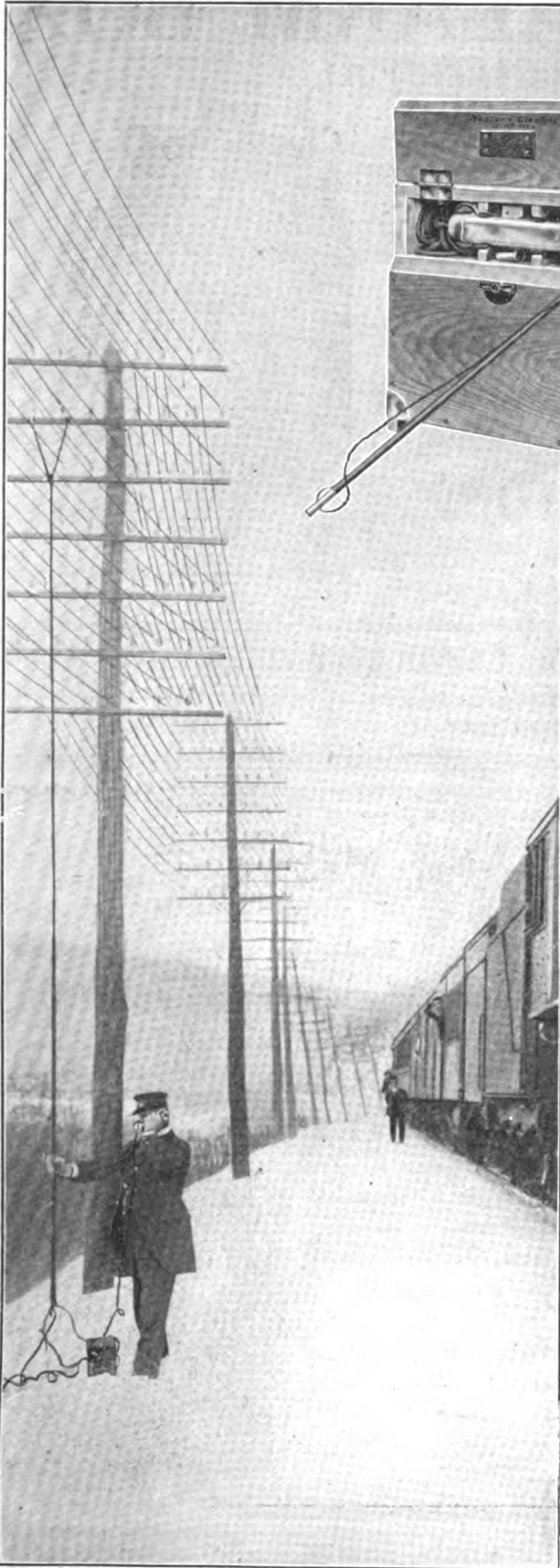
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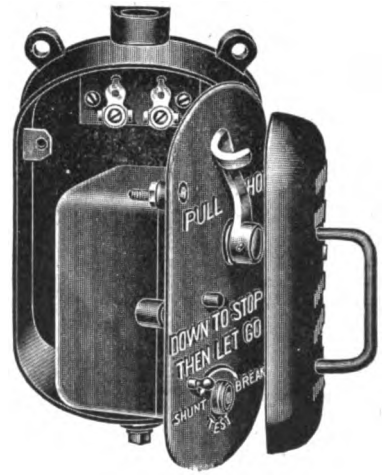


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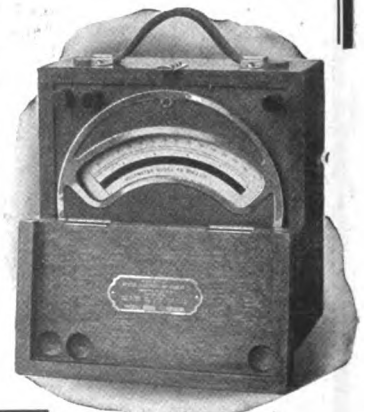
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Mr. J. M. Carson, of Statesville, N. C., writes: "Your action in renewing my subscription meets my approval O. K. Enclosed find check for \$2.00. Keep the AGE coming."

Mr. David Homer Bates, in renewing his subscription for another year, writes: "With great pleasure I send you my subscription for another year."

Telegraph and Telephone Age

No. 2.

NEW YORK, JANUARY 16, 1916.

Thirty-fourth Year.

CONTENTS.

Adjustment of Telegraph Apparatus (<i>Concluded</i>).....	25
Telegraph and Telephone Patents. Stock Quotations. Personal.	26
Postal Executive Office Notes. Impressive Funeral of a Messenger Boy.....	27
Western Union Executive Office Notes.....	28
The Cable.....	29
Canadian Notes. The Telephone. Dinner to Wireless Telephone Engineers.....	30
Review of Telephone Articles. Radio Telegraphy. Wireless Junction.....	31
Wireless Suit Dismissed. Large Contract for Wireless Equipment. Review of Radio Articles.....	32
The Associated Press—What It Is.....	33
New Book—Inventions and Patents.....	34
The Morkrum Printing Telegraph System. (<i>Continued</i>).....	35
The Bipolar Telephone Receiver. By E. B. Tuttle.....	36
An Extraordinary Cable Situation. Printing Telegraphs for Business Correspondence. United States Censorship.....	37
General Notes on Grounding. By H. M. Wolf.....	38
Telegraphing by Eye Winks. By F. A. Stumm. Answers to Questions.	40
Efficiency Engineering in the Telegraph Service (<i>Continued</i>).....	41
Construction and Repair of Telegraph Lines (<i>Concluded</i>). First American Telegraph Company. By J. E. Hall.....	42
The Railroad. Death of S. A. D. Forristall. New York Telegraphers' Aid Society.....	45
Principles of Wireless Telegraphy.....	46
Wall Street Notes. A Personal Word from Mr. McClintic. Former Telegraphers Who Have Made Good—Hon. Lee Mantle.....	47
Obituary. Questions to be Answered.....	48
Industrial—Western Electric Year Book. International Transmitter Company. Holiday Greetings. Letters from our Agents.....	49

Adjustment of Telegraph Apparatus.*

(*Concluded from page 2, January 1.*)

When signals are not received as clearly and reliably as they should be, the cause of the trouble is naturally looked for in the relay or sounder. In the previous issue general instructions along this line were given. In many cases the source of trouble will prove to be too tight an adjustment of the trunnion binding posts, thus preventing the armature from responding readily to the influence of the magnet. This fault is particularly emphasized on circuits in which the strength of the current flowing through the relay coils is weak. Where the main-line current is strong the magnet is frequently able to overcome this drawback, but it is evident that even then the working margin of that instrument has been cut down to a degree corresponding with the binding pressure upon the trunnions. It follows, then, that the trunnion binding posts should always be so adjusted that the axis upon which the lever and armature rest may move freely in its sockets.

If the signals continue to drop out the fault may possibly be found in a loose connection somewhere in the local circuit. If tightening the binding posts fails to remove the trouble examine the fine wire wound around the shaft of the relay lever, one end of which is attached to the shaft itself and the other to the trunnion binding post where the local battery current makes its exit. If this wire becomes broken the sounder signals will certainly "drop out" at times owing to the loose connection made between the shaft and the post as the former turns in the socket. The purpose of the fine wire

is to bridge over this imperfect connection in the local circuit and the operator will at once see the necessity of keeping the wire connection intact.

When a sounder stands "open" and it is desired to ascertain if the break in the local circuit lies in some of the relay connections, place the blade of a knife across both local binding posts situated just behind the relay spring. If the break is in that instrument the sounder will close. If the latter remains open try the same method with the two posts of the sounder itself. If the coil or wire connections there are broken a spark will be noticed the moment the blade makes and breaks contact with the two posts. The sounder, however, will not close, because the magnet coils are short-circuited.

The knife-blade method should never be resorted to where sounders are connected in multiple, such as is usually the case in large modern offices, because the short circuiting of the coil draws so much current through the low resistance of the blade that the current melts the fuse and opens the other four or five companion sounders included in that particular group. The blade may be placed across the local posts of the relay, however, because it will not short-circuit the coils of the magnet, hence, the resistance is not lowered. It may also be used where the sounder coils are in series with a loop or lamp resistance, such as the arrangement obtaining on duplex and quadruplex circuits.

Up to this point the suggestions concerning various methods of adjusting telegraph apparatus have been confined to the receiving instruments. The sending apparatus demands quite as much attention and skill on the part of the operator as do the receiving instruments.

One of the most common mistakes the operator makes is to find fault with the key, because it apparently limits his ability to send fast, or to make the Morse alphabet easily. The trouble is really due, not to the key, but to what may be called the electrical and mechanical inertia of the instruments.

For example: On a telegraph wire where there are a great many offices, such as we find on some railroad circuits, there are necessarily many relays, the highly wound coils of which compose the greater part of the total resistance. Where such a condition exists, the counter-electromotive force developed within and by the many coils is so great that it checks the quick action of the current in its operation of building up the magnetism in the iron cores of the relays, and thus demands a slower rate of speed on the part of the sending operator in order to fully form his characters. Unless he complies with this requirement, the second impulse in the formation of a character will be begun before the preceding one has been fully "built up," with the result that the key will "stick" and gets the blame for it.

With sounders, as usually arranged, the case is different, but the effect is just the same. If the

* From "Pocket Edition of Diagrams and Complete Information for Telegraph Engineers and Students."

lever of the sounder is given an abnormal degree of play and "dots" are made rapidly, the lever will probably remain in an "open" position during the experiment. Decrease the speed somewhat and it will respond indifferently; if, however, the key is opened and closed very slowly the lever will follow the movement faithfully. Finally, if the lever armature is adjusted close to the magnet and given but very little play every dot will be heard, no matter how rapidly dots are made.

The lesson to be learned from these experiments is that where speed is required the lever must be given as little play as practicable in order to reduce the mechanical inertia to a minimum.

The application of these lessons is directed principally to those in charge of duplex and quadruplex apparatus, and cautionary to operators in branch offices working sounders on legs or loop extensions. On account of the tongue and the retractile spring on transmitters and accuracy with which pole-changers must be manipulated, those instruments demand very careful adjustment to the speed of the transmitting operator. Sounders, on the other hand, once properly adjusted, respond so clearly (on the transmitting side) that operators in branch offices working on duplex loops find that the sending side works apparently as well on a poor wire as on a good one. The result is that in bad weather the fact is frequently overlooked that the pole-changer or transmitter, as the case may be, cannot perform its functions properly at dry-weather speed, and operators by thus maintaining their usual speed cause no end of trouble both to themselves and the quadruplex chief at the main office.

Telegraph and Telephone Patents.

ISSUED DECEMBER 21, 1915.

1,164,662. Party-Line Telephone System. To G. E. Mueller, La Grange, Ill.

1,164,907. Printing Telegraph System. To C. G. Ashley, Chicago, Ill.

1,165,255. Telephone Transmitter. To C. D. Herrold, and A. B. Portal, San Jose, Cal.

ISSUED DECEMBER 28, 1915.

1,165,412. System of Aeroplane Signaling. To H. M. Horton, New York.

1,165,454. Apparatus for Receiving and Strengthening Electric Oscillations. To J. Schiessler, Baden, Austria-Hungary.

1,165,690. Telephone-Exchange Trunking System. To T. G. Martin, Chicago, Ill.

1,165,709. Automatic Telephone System. To W. T. Powell, Chicago, Ill.

1,165,728. Telephone Trunking System. To J. A. Taggart, Rochester, N. Y.

1,165,862. Apparatus for Wireless Signaling. To R. A. Fessenden, Brant Rock, Mass.

1,166,034. Electrical Apparatus for Transmitting Signals. To W. Akemann, Eassen-on-the Ruhr, Germany.

1,166,090. Indicating System for Telephone Pay Stations. To A. J. Seymour, Minneapolis, Minn.

1,166,152. Telephone Receiver. To T. Rhodus, Chicago, Ill.

Stock Quotations.

Following are the New York closing quotations of telegraph and telephone stocks on January 12.

American Telephone and Telegraph Co.	127
Mackay Companies	78½-79½
Mackay Companies, preferred	66¼-66½
Marconi Wireless Tel. Co. of Am. (Par value, \$5.00)	3½
Western Union Telegraph Co.	88¼

[This publication is prepared to purchase for its friends one or more shares of Western Union, Mackay, Marconi or any other stocks, either outright or on the installment plan. Remit \$10.00 per share as the initial payment if purchase is to be made on the installment plan. The stock will then be purchased at the market price and the balance due on the stock can be paid off at the rate of \$5.00 per month or in any other sum to suit the convenience of purchaser. In the meantime 6 per cent interest will be charged for the balance due on the stock. The purchaser, however, will have the benefit of the dividends, which, in many cases, will more than pay the interest charges. As soon as the stock is paid for, it will be registered in the purchaser's name and delivered to him. The commission charges on the purchase of stock is \$1.00 on transactions covering from one to eight shares. For eight or more shares the commission charge is 12½ cents per share. In remitting to cover purchases of stock, name the price at which purchases are to be made.]

PERSONAL.

MR. THOMAS A. EDISON will be elected an honorary member of the Illuminating Engineering Society, at the banquet to be held by the Society, at the Biltmore Hotel, New York, February 10.

MAUDE CLARK HOUGH, wife of Mr. I. D. Hough, division wire chief, Dallas, Tex., has just published a lullaby, entitled "Drew." She is the author of the poem, which is full of tender feeling.

MR. RICHARD DECKER PRESCOTT, superintendent telegraph and telephone, Republic of Panama, spent Christmas and New Years in New York. He returned to the Canal Zone, sailing from this city January 8.

MR. THOMAS GREEN, formerly an operator for the Western Union Telegraph Company, at Jackson, Miss., is now travelling salesman for the Westinghouse Electric and Manufacturing Company, with headquarters at Minneapolis, Minn.

MASTER JOHN J. HARRIS, jr., son of Senator John J. Harris, of Dolores, Colo., an old-time telegrapher, was awarded first prize for electrical exhibits at the electrical show in Denver, Col., during "prosperity week." Young Harris is only thirteen years of age and he exhibited a wireless outfit of his own make, which was the subject of many compliments from electrical people. Senator Harris, his father, was superintendent of telegraph for the Denver and Rio Grande Railroad during the early eighties, and is a member of the Old Time Telegraphers and Historical Association.

MR. JOSEPH UHRIG, an old-time telegrapher, well-known in New York and Chicago, is now conducting a successful real estate loan and mortgage business in Chicago. He is the senior member of the firm of Uhrig, Davidson and Company, with offices in the First National Bank Building, Chicago. In a recent circular issued by the firm, some sound information is given regarding Chicago real estate and investments in general.

MR. THOMAS S. BRICKHOUSE, winner of the championship prize at the San Francisco telegraph tournament last August, was married December 22, 1915, to Mrs. Genoveva B. Smiley, at the home of the bride's mother in Alameda, Cal. The affair was a very quiet one, only intimate friends of the family being present. Mrs. Brickhouse was formerly Miss Genoveva Barrett, who was born in San Francisco, and has made her home with her mother in Alameda, a fashionable suburb of San Francisco, practically all her life. Mr. Brickhouse is an operator for E. F. Hutton & Co., brokers, of San Francisco and New York.

POSTAL TELEGRAPH-CABLE CO.

EXECUTIVE OFFICES.

MR. EDWARD REYNOLDS, vice-president and general manager, New York, has been invited to attend the fourth annual dinner of the "Dot and Dash" Club, at the Hotel Adelphia, Philadelphia, Pa., Saturday evening, January 22. Mr. Reynolds will be a guest of the club and will probably make an address. Mr. W. W. Donnelly is secretary.

GREENE COUNTY DINNER.—The eleventh annual dinner of the Greene County Society in the City of New York, of which organization Mr. Edward Reynolds, vice-president and general manager of this company, is president, will be held at the Hotel Astor, Thursday evening, January 27. Ladies will be admitted to the banquet table. The announcements sent out by president Reynolds are printed in green ink, and he says the menu and programme, will long keep this dinner green in the memory of the members.

MR. C. P. BRUCH, vice-president of this company, and president of the Ohio Society of New York, made an excellent address before the meeting of the society, in its rooms at the Waldorf-Astoria Hotel, December 13, last. His text was the cultivation and practice of friendliness among the members.

MR. E. KIMMEY, superintendent, New York, has returned from a business trip through his district.

E. S. BUTTERFIELD, aged sixty-two years, formerly cashier for this company at New York, died January 7. He was a native of Savannah, Ga. After nine years service in mercantile business, Mr. Butterfield accepted a position in the supply department of the American Rapid Telegraph Company in 1880, shortly afterwards becoming cashier at New York. He became cashier and general agent of the money transfer department of this company, when the successors of the American Rapid Com-

pany were absorbed by the Postal Telegraph-Cable Company. Mr. Butterfield was for many years treasurer of the Serial Building Loan and Savings Institution, and was well and favorably known throughout the country. He retired from active service four years ago.

MANAGERS APPOINTED.—W. A. Larey, Boca Grande, Fla.; T. D. Hayes, Florence, Kan.; Mrs. Alice M. Stewart, Red Bluff, Cal.

THE ANNUAL MEETING of the Magnetic Club was held at 253 Broadway, New York, January 13. The election of officers resulted as follows: President, Edward Reynolds; vice-presidents, E. P. Tully, Wm. P. Bowman, J. J. Whalen, W. I. Capen; secretary, W. B. Dunn; treasurer, J. J. Cardona. The spring meeting of the club will be held about the middle of April, and Mr. Clarence H. Mackay, president of the Mackay Companies has promised to attend.

THE MUTUAL INVESTMENT CREDIT UNION will hold its annual meeting at 253 Broadway, Tuesday, January 18. A board of directors, a credit committee and a supervisory committee will be elected. Officers will be elected by the board of directors within the succeeding ten days.

THE GLOVERSVILLE, N. Y., office of this company will move into new quarters February 1. Mr. P. Moldenhauer is the manager.

MR. C. H. ASHBURN, superintendent, Postal Telegraph-Cable Company, Richmond, Va., writes: "It gives me pleasure to enclose herewith my check for \$2.00 in renewal of my subscription to the AGE for another year."

Impressive Funeral of a Messenger Boy.

A most touching ceremony was held at the funeral of Noah Jehu, a messenger boy of the Postal Telegraph-Cable Company, in Scranton, Pa., who was killed by an automobile, November 16, last. The body, clad in messenger uniform, was carried from the house by six uniformed fellow messengers. The left hand of the dead boy held a message addressed: "Our Father, who art in Heaven"—the remainder of the Lord's prayer making up the body of the message. The message was signed "Noah Jehu."

Before the funeral service ten uniformed Postal messengers entered the room and lined up alongside the coffin. They carried their caps at their left breasts, the cap of the dead messenger being similarly placed.

Among the floral offerings was a blanket of carnations sent by the operators and messengers of the Postal office. Across it was the inscription, "The Last Call."

MR. SIDNEY B. GIFFORD, formerly and for many years superintendent of the Western Union Telegraph Company at Syracuse, N. Y., who retired from active service twelve years ago, writes: "I have pleasure in sending you herewith \$2.00 for renewal of my subscription for the AGE for another year."

WESTERN UNION TELEGRAPH CO.

EXECUTIVE OFFICES.

NEW YORK VISITORS.—Among recent executive office visitors were Mr. H. C. Worthen, general manager southern division, Atlanta, Ga., who was accompanied by Mrs. Worthen, and Mr. M. T. Cook, assistant general manager western division, Chicago.

Mr. W. A. SAWYER, district commercial superintendent, and A. O. Wallis, superintendent of buildings, New York, visited Albany, N. Y., January 6, in connection with the renovation of the office at that point.

Mr. U. G. LIFE, district commercial superintendent, Salt Lake City, Utah, recently gave a dinner to the Salt Lake messenger force, forty in number.

Mr. LEVI S. WILD, district commercial manager at Butte, Mont., and one of the best-known telegraphers in the West, was retired on pension, January 1. He has been in the service of the Western Union Company forty-seven years and has worked in many of the western and southern cities. In 1867 he crossed the plains on horseback from St. Joseph, Mo., to San Francisco, and was the first manager of the Virginia City, Nev., office. Mr. Wild has resided in Butte thirty years and is one of the prominent citizens of that place.

MESSRS. E. C. LABADIE, division traffic supervisor, Denver, Col., and T. D. Quinn, of the district supervisor's office at Atlanta, Ga., were in New York recently, in connection with automatic operation.

Mr. W. L. JACOBY, president, American District Telegraph Company, New York, returned to his office January 3, after a siege of sickness with the grip.

Mr. G. E. HANNAH, formerly executive superintendent of the Nathan Manufacturing Company, New York, has been appointed purchasing agent for the American District Telegraph Company of New Jersey, with headquarters in New York.

Mr. GEORGE D. BUTLER, manager at Rochester, N. Y., has been retired after serving this company in various capacities in that city for over fifty years. He has been manager of the office since 1883. His first position in Rochester was as night operator in October, 1865, and he succeeded Mr. E. M. Barton, as chief operator a year later. Mr. Barton, it will be remembered, established the Western Electric Company and was its president until a few years ago.

Mr. EDWARD EVERETT.—The jurisdiction of Mr. Edward Everett, manager of time service, has been extended to similarly cover the money transfer service, his title now being "Manager, Money Transfer and Time Services."

Mr. C. R. HILLS has been appointed manager at Belvidere, Ill., to succeed Mr. J. W. Hilliker, transferred to Muscatine, Iowa.

Mr. I. D. HOUGH, division wire chief, Dallas, Tex., and Mrs. Houghs, celebrated the twenty-fifth anniversary of their wedding, December 21. A number of friends surprised them at their home, by presenting them with some very handsome silver. The event was a happy one to all concerned.

MRS. E. C. COOPER has been appointed manager at Rahway, N. J., vice Miss Margaret Curran.

MISS T. F. CLEAR has been appointed manager at Stamford, Conn., vice Mrs. R. B. Mills.

Mr. J. W. HILLIKER, manager at Belvidere, Ill., has been promoted to be manager at Muscatine, Iowa.

Mr. H. A. ALLRED has been appointed manager at Payette, Idaho, to succeed Mr. E. J. Lackore, transferred to Logan, Utah.

Mr. E. J. LACKORE, former manager at Payette, Idaho, has been transferred to Logan, Utah, succeeding Mr. E. A. Thompson, who has gone to the district of Mr. J. R. Terhune, district commercial superintendent, Nashville, Tenn.

Mr. DANIEL MOSCOWITZ, of the traffic department at Denver, Col., has been appointed manager at Conrad, Mont., vice E. S. Bogart.

Mr. JOSEPH MEYNIER, former supervisor, has been appointed night chief operator at New Orleans, La.

CONFERENCE.—A conference of district commercial superintendents of the Eastern Division was held in the office of Mr. A. G. Saylor, general manager, January 4 and 5. Among those present were the following superintendents: J. F. Nathan and W. A. Sawyer, New York; E. P. Griffith, Jersey City, N. J.; A. C. Terry, Pittsburgh, Pa.; J. W. Reed, Philadelphia, Pa.; C. F. Ames, Boston, Mass., and A. Woodie, Buffalo, N. Y.

APPOINTMENTS.—Managers have recently been appointed in the Southern Division as follows: R. E. Willis, Salisbury, N. C.; E. R. Dawson, Union, S. C.; Miss M. A. Gann, Blackville, S. C.; C. King, Reidsville, S. C.; A. B. Taylor, Weldon, N. C.; W. J. Todd, Camden, S. C.

CINCINNATI BRANCH MANAGERS.—A meeting of Cincinnati branch office managers was held recently, at which manager L. R. Scholl and his assistants discussed the various phases of the telegraph service.

NEW GULF DIVISION MANAGERS.—The following appointments of managers have been made recently in the Gulf Division: W. S. Hearn, Alvarado, Tex.; N. Cheek, Taylor, Tex.; W. L. Keel, Bay City, Tex.; L. I. Bennen, Seymour, Tex.; A. N. Blough, Sweetwater, Tex.; W. C. Rutledge, Victoria, Tex.; N. A. Burns, Cushing, Okla.; F. J. Chopp, Guthrie, Okla.; Miss G. Whittaker, Henryetta, Okla.

THE SALT LAKE CITY, Utah, office of this company is being remodeled and thoroughly modernized in equipment and furnishings. Among the improvements will be a reading and lounging room for the messengers.

THE MORSE ELECTRIC CLUB will hold its winter dinner at the Hotel McAlpin, Broadway and Thirty-fourth street, New York, Thursday, February 24. An interesting programme is being arranged and a large attendance is looked for. Mr. W. C. Merly, 16 Dey street, is the secretary. The annual meeting of the club was held at 195 Broadway, January 12. The secretary reported an increase of 110 members during the past year. The present officers were re-elected, as follows: President, Belvidere Brooks; vice-presidents, A. G. Saylor and W. N. Fashbaugh; treasurer, R. J. Murphy; secretary, W. C. Merly. Messrs. J. B. Van Every and M. J. O'Leary were re-elected directors to serve for three years, and Mr. H. W. Ladd, was elected a director in place of Marion H. Kerner, deceased.

THE CABLE

MR. CHARLES PRIEST, chief electrician of the Commercial Cable Company, broke his arm recently on board the cable-repairing steamer, "Mackay-Bennett," while repairing one of the Atlantic cables. He is, however, rapidly recovering.

C. J. WALLASTON, aged ninety-five years, one of the earliest submarine telegraph engineers, died at Burnham, Somerset, England, November 27, last. He was one of the engineers in charge of the work of laying the cable between Dover, England, and Cape Grisnez, France, in 1850, the concession for the laying of which was granted by Louis Napoleon.

THE BRITISH ADMINISTRATION announces abnormal delay to cable business to Mediterranean points, owing to cable interruptions and pressure of telegrams.

SUSPENSION OF DEFERRED SERVICE AND CABLE LETTERS.—Owing to the great volume of cable business, all of the cable companies have been compelled to suspend, temporarily, both the deferred service and the cable letter service to Europe.

CABLE AGAIN INTERRUPTED.—The cable between Paramaribo and Cayenne, Guiana, which was interrupted November 13, 1915, was restored recently, but was again interrupted January 8.

THE FRENCH CABLE COMPANY announced recently that it could only accept messages subject to heavy and indefinite delay, and then at the risk of the sender. This notice was made necessary on account of the severe storms in Great Britain and on the Continent.

CHINA CABLES.—The direct Shanghai cable has been interrupted. Messages for China may go via Hongkong subject to all British censorship restrictions; or via Japan at increased rates. There will be delay via Japan. Japan permits codes but maintains censorship, and messages are sent at senders' risk. Private telegrams are not permitted to the province of Yunnan in China, and only private telegrams in plain language are allowed to the province of Kweichow, at the sender's risk. The restrictions on China traffic do not affect messages to Hongkong.

EARLY CABLE ACROSS THE NORTH RIVER.—Alfred Vail records in his diary, under date of July 21, 1848: "They are working across the North River through a gutta percha covered wire." This refers to the electric telegraph and no doubt this wire connected Jersey City with New York City. When the cable between these points was an assured success, the wires which crossed the North River from the top of high masts, from the upper part of Manhattan Island to the New Jersey shore were abandoned.

PACIFIC CABLE BOARD REPORT.—The report of the Pacific Cable Board for the year 1914-15, shows that the traffic receipts were \$1,106,400, and other sources of revenue brought the total income up to \$1,125,225. The total expenditures were \$731,795, having a surplus of \$393,430. Interest and sinking fund requirements totalled \$433,005, so that the balance to be provided by the Imperial and Dominion governments was \$39,575, a sum which is less than last year's figure by \$60,175. The net traffic receipts exceeded those of the previous year by \$126,125; there was a decrease of traffic at ordinary tariffs, but the deferred traffic showed an increase of 599,879 words, and the week-end traffic rose from 326,920 to 1,074,252 words.

HOW THE FANNING ISLAND CABLE WAS RESTORED.—Mr. R. M. Fitt, manager of the British interests on Fanning Island, Pacific Ocean, while in San Francisco recently, related an interesting incident in connection with the cutting of the British cable at that island last year by the German cruiser, "Nürnberg." Hugh Gregg, an operator in the station there, dived at the risk of his life into the shark-infested waters and recovered the lost end of the cable soon after the "Nürnberg" completed its work of destroying the station. "After the cutting of the cable," Mr. Fitt said, "the 'Nürnberg' towed the sea end off shore and dropped it in deep water. Gregg devised a glass-bottom boat, and, after cruising around for several days, located the lost end in forty feet of water. Gregg dived repeatedly until he succeeded in attaching a line to it."

REFUND ON CENSORED CABLEGRAMS.—Mr. John C. Willever, commercial general manager, Western Union Telegraph Company, New York, explains that the agreement of certain European governments to reimburse under certain conditions, senders of commercial cables which are held up by the censors, applies only to messages sent to points beyond Great Britain and only to that part of the tolls which covers service beyond Great Britain, provided the amount involved is five francs or more. The part of the tolls which may be refunded is known as the "unexpended balance," because the service for which the money was paid never was rendered. There is no refund for tolls between here and Great Britain on such messages. Claims for reimbursements are made to the cable companies and they take the matter up with the foreign governments, receiving from those governments the amount of the "unexpended balances," in case it is decided that there is merit in the sender's claim. The arrangement does not apply to messages sent prior to June 15, 1915.

Cable Interruptions.

Interruptions to submarine telegraph cables are reported to January 12, as follows:

Azores and Emden (two cables), August 5; Shanghai and Tsingtau, and Tsingtau and Chefoo, August 24; Sweden and Germany, September 30; Almeria and Melilla, October 1; Penongomera and Alhucempas (defective cable), October 1; Yap and Menado (offices closed), October 7; Obock and Djibouti, November 6; Constantinople and Tenedos, November 6, 1914; Paramaribo and Cayenne, January 8.

CABLE TESTING.—An excellent book for cable operators is "Beginners Manual of Submarine Cable Testing and Working," by G. M. Baines. The author is a practical cable man, and has written his book in clear language for the benefit of beginners and students. It is valuable to the practical man as well. The price is \$3.50 per copy. For sale by TELEGRAPH AND TELEPHONE AGE, 253 Broadway, New York.

CANADIAN NOTES.

SIR THOMAS SHAUGHNESSY, president of the Canadian Pacific Railway, Montreal, Que., was created a Baron by King George, January 1. Sir Thomas was born in Milwaukee, Wis., in 1853. He received the order of Knighthood in 1901, and in 1907 was raised to the rank of Knight Commander of the Victorian Order. In this position, as president of the railway company, he heads an army of over 35,000 men, including the employees of the telegraph system.

LIEUT. T. F. AHEARN, son of Mr. Thomas Ahearn, an old-time telegrapher, and now president of the Ottawa Electric Railway, Ottawa, Ont., has been promoted to the rank of captain. Lieut. Ahearn is now in France with the Canadian troops, but has been recalled to Ottawa to assist in munitions work.

MR. H. A. BAKER, former wire chief of the Great North Western Telegraph Company, Montreal, Que., has been promoted to be assistant chief operator at the same point.

R. B. McMICKING, aged seventy-three years, an old-time Canadian telegrapher, died at Victoria, B. C., November 27, last. He was engaged by the Collins overland project, which started to build an overland line from the United States across Behring Strait and Asiatic Russia, to Europe, in 1863. In 1871 he was appointed superintendent Dominion government telegraphs at Yale, B. C., in charge of the cables between the main land and Vancouver Island. He was latterly connected with the British Columbia Telephone Company.

EDUCATIONAL EXHIBIT OF PRINTING TELEGRAPH.—An operating exhibit of the Morkrum printing telegraph system is being made by the Great North Western Telegraph Company, in the window of the Hydro Electric Company's office in Toronto, Ont. Both sending and receiving equipment are shown in practical operation, in full view of the public.

GRAND TRUNK TIME SERVICE.—The Grand Trunk Railway time service has been placed under the jurisdiction of the manager of telegraphs, at Montreal. Mr. H. Hulatt is manager of telegraphs.

AMONG THE NEW YORK VISITORS during Christmas week were Mr. J. McMillan, manager of telegraphs, Canadian Pacific Railway Company's Telegraph, Montreal, Que., accompanied by his wife and three daughters.

PRINTING TELEGRAPHS.—A public demonstration of the operation of the Morkrum printing telegraph system between Ottawa, Ont., and Montreal, Que., was given at Ottawa, December 16 last. Among those present were Mr. George D. Perry and C. E. Davies, general manager and traffic superintendent, respectively, of the Great North Western Telegraph Company, Toronto, Ont.; J. O. Carr, of the Morkrum Company, Chicago, and several government officials.

THE TELEPHONE.

MR. C. F. MASON, division superintendent in southern California for the Pacific Telephone and Telegraph Company, with headquarters at Los Angeles, Cal., is the subject of an interesting personal sketch in the *Los Angeles Times*. The article dwells upon Mr. Mason's rise and activities. He began his business career with the telegraph and entered the telephone service eight years ago. He is one of the youngest division superintendents in the Bell service. He was connected with the Postal Telegraph-Cable Company in New York several years ago as a clerk, and was familiarly known as "Charlie" Mason.

TESTING CABLES.—Mr. D. S. Hilborn read a paper entitled "Three Ways of Testing Cables," before the Spare Pair Society, Philadelphia, Pa., December 16. Mr. W. McGlinchey, Broad and Cherry streets, Philadelphia, is secretary.

TELEPHONE MEN TO STUDY MILITARY SERVICE.—A class for the study of military ethics and signal corps work has been formed by the members of the Telephone and Telegraph Society of New England, Boston section. About 100 members have joined and it is the intention to hold a night school for the purpose of carrying on the instructional work. A committee was named to perfect details of organization, as follows: L. W. Abbott, chairman of the Boston section; John Highlands, John Currie, A. S. Butler and Stephen Rhodes.

Dinner to Wireless Telephone Engineers.

MR. H. B. Thayer, president of the Western Electric Company, gave a dinner on December 29, to engineers of the Bell System, who were instrumental in making international wireless telephony a success in October, last.

Among the guests who told of the achievement were, Bancroft Gherardi, assistant chief engineer of the American Telephone and Telegraph Company, who was with President Vail when the latter talked to Mare Island by transcontinental wireless telephony; H. E. Shreeve, who was one of the "listeners" at Paris; Lloyd Espenschied, who heard

the wireless messages at Honolulu; R. H. Wilson, who was stationed at Darien, and R. L. Hartley, who was with Mr. J. J. Carty, chief engineer of the American Telephone and Telegraph Company at Mare Island. Among other guests were J. J. Carty, H. A. Halligan, C. E. Scribner, J. L. McQuarrie, F. B. Jewett, K. W. Watterson, O. B. Blackwell, E. H. Colpitts, H. D. Arnold, John Mills, R. A. Heising, A. M. Curtis, B. W. Kendall, H. J. Van der Bijl, W. Wilson, B. Webb, C. R. Englund and R. F. Trimble.

At the ends of the speakers' table were facsimile reproductions of the Arlington naval station, from which the wireless messages were sent, and of the Eiffel Tower at Paris, where the transatlantic messages were received.

MODERN AMERICAN TELEPHONY is an excellent and valuable book by Arthur Bessey Smith, a high authority on telephony. It has 800 pages and 470 illustrations, and covers the subject very comprehensively. There are no mathematics outside of the standard electrical formulas. The book covers every branch of telephone work. Price \$2.00 per copy. For sale by TELEGRAPH AND TELEPHONE AGE.

Review of Principal Articles in Contemporary Telephone Publications.

CABLE BUG.—At the recent convention of the Independent Telephone Association of America held at San Francisco, Mr. Albert Schuler presented a paper in which he called attention to a species of beetle which bores holes in lead sheathing of telephone cable during the dry season, causing trouble in wet weather. The paper is published in *Telephony* for January 8.

THE WIRE CHIEF AND HIS JOB is the title of the leading article in the January number of *The Transmitter*, by J. O. Martin. The author describes the duties of the wire chief and incidentally gives some good advice. The article is illustrated.

THE TELEPHONE AND THE COMMUNITY.—Mr. J. S. Wiley, general auditor, Bell Telephone Company of Pennsylvania, is the author of an article in the January *Transmitter* on the subject "The Telephone and the Community," in which he points out the relations of the two.

RADIO-TELEGRAPHY.

Marconi Notes.

Mr. G. S. De Sousa, traffic manager, has returned from a brief business trip to Washington.

Mr. V. Ford Greaves, radio engineer of the Department of Commerce, Washington, D. C., and Mr. C. P. Edwards, general superintendent of the Canadian Radio telegraph service, Ottawa, Ont., were recent New York visitors.

Mr. William Vernon Moore, of the transoceanic staff, New York, who was recently granted indefinite leave of absence to enable him to return home to England to join the colors, has been commis-

sioned a warrant officer in the Royal Naval Reserve.

INFRINGEMENT SUIT.—The Marconi Wireless Telegraph Company of America, has brought suit against the Detroit and Cleveland Navigation Company at Buffalo, N. Y., for using infringing apparatus on its steamships.

SAYVILLE ANTENNAE DESTROYED BY SLEET.—The antennae of the radio station of the Atlantic Communication Company, at Sayville, L. I., was brought down by the weight of sleet, December 29. Repairs were made at once.

WIRELESS STATION AT CAPE MAY.—The Marconi Wireless Telegraph Company of America, has awarded a contract for the erection of a new station building at Cape May, N. J. A tower of 140 feet high will also be erected.

WIRELESS BETWEEN NAVY SHIPS.—The United States battleship "Wyoming" reports that while near Cape Henry, Va., on January 10, radio telegraph messages were exchanged with the "San Diego" at Graymas, Mexico, a distance of 2,500 miles.

ENGLISH WIRELESS DIVIDENDS.—The directors of the English Marconi Wireless Telegraph Company have declared a seven per cent preferential dividend upon the cumulative participating preference shares, and an interim dividend of five per cent on the ordinary shares.

CONTROL OF WIRELESS BY AMERICAN GOVERNMENTS.—Government control of all radio stations in the United States, South and Central America, was advocated by Secretary Daniels of the Navy in addressing the delegates to the Pan-American Scientific Congress in Washington, D. C., January 7.

THE NATIONAL AMATEUR WIRELESS ASSOCIATION has been incorporated in New York for the purpose of forming amateur wireless telegraph and telephone operators into a military signal corps. Mr. Wheeler N. Soper, assistant editor of *THE WIRELESS AGE*, New York, is one of the incorporators.

Wireless Injunction.

Recently the Marconi Wireless Telegraph Company of America brought an action against the American-Hawaiian Steamship Company for infringement of its "tuning patent." In this suit, the Marconi Company obtained an order to show cause from Judge Veeder, sitting in the Eastern District of New York, why a preliminary injunction should not be granted enjoining the steamship company from continuing the use of certain wireless telegraph apparatus manufactured by the Kilbourne and Clark Manufacturing Company, of Seattle, Wash., and which had been installed on its steamship "Floridian." Judge Veeder, January 8, entered an order granting the preliminary injunction and enjoined the further use of the Kilbourne and Clark apparatus on the steamship, but in order to allow the steamship company an opportunity to replace this infringing apparatus with non-infringing apparatus, suspended the operation of the injunction for thirty days.

Wireless Suit Dismissed.

Judge Mayer dismissed, January 7, the wireless patent infringement suit brought by Samuel M. Kintner and Halsey M. Barrett, receivers of the National Electric Signaling Company of Pittsburgh, Pa., against the Atlantic Communication Company, which operated the Sayville wireless station. It was complained that the defendant had infringed two claims of a patent granted in April, 1909, to Reginald A. Fessenden, and four claims of another patent of the same inventor, which applied to the manufacture of wireless apparatus.

Judge Mayer held that the claims were invalid.

Large Contract for Wireless Equipment.

Mr. E. J. Nally, vice-president and general manager of the Marconi Wireless Telegraph Company of America, New York, announces that his company has closed a contract with the Inland Navigation Company, New York, for the installation of wireless apparatus on thirty-six freight barges, which are soon to ply the waters of the Mississippi. The fleet is to be composed of 1,400 ton steam-propelled barges.

The contract provides for new two kilowatt, 500-cycle panel type Marconi quenched gap sets, giving a continuous communication range of 400 miles or more. Under the standard rental terms, Marconi operators will be supplied and service with land stations provided as in ocean navigation. The barge route will extend from Minneapolis, Minn., to New Orleans, La., along the Mississippi and tributaries, and thence to New York and San Francisco by retransfer to coastwise vessels.

Institute of Radio Engineers.

At the meeting of the Institute of Radio Engineers, held at Columbia University, New York, January 5, an interesting paper by prof. A. Hoyt Taylor and Mr. A. S. Blatterman, on "Variations in Nocturnal Transmission," was presented by prof. Taylor. Capt. W. H. G. Bullard, head of the U. S. Naval Radio Service, and Mr. V. Ford Greaves, of the Department of Commerce, participated in the discussion.

Officers for 1916 were elected as follows: President, prof. A. E. Kennelly; vice-president, John L. Hogan, jr.; treasurer, Warren F. Hubley; secretary, David Sarnoff; editor of publications, prof. Alfred N. Goldsmith; advertising manager, Louis G. Pacent.

After the meeting, the new board of direction for 1916 met at the Holland House, where the three additional directors to serve on the board for 1916 were appointed and a general discussion held, as to the best methods of increasing the activities of the Institute, which has shown remarkable progress during the year just ended.

Review of Principal Articles in Contemporary Radio-Telegraph Publications.

KEYBOARD WIRELESS OUTFIT.—Mr. Austin C. Lescarbourea describes and illustrates in the Decem-

ber number of *The Wireless Age*, New York, a wireless receiving set in which all the operations are controlled from a simple keyboard. This apparatus is the invention of Walter Goodchild.

FREQUENCY CHANGERS.—The first part of an article headed "Radio Frequency Changers," by Dr. A. N. Goldsmith, is published in the December number of *The Wireless Age*. The article is confined to a description of the various types of apparatus whereby the frequency of an alternating current may be directly increased with the use of the usual gap discharger.

TRANSATLANTIC WIRELESS TELEPHONY is summarized in the December issue of the *Wireless World* (London) for December. Illustrations of the Arlington, Va., radio towers and the Eiffel tower at Paris are shown.

DR. MARCONI.—An artistic photogravure portrait of Dr. William Marconi, suitable for framing, is presented with the December number of the *Wireless World* of London.

WIRELESS DEVELOPMENT.—*The Wireless World* (London) for December contains an article under the caption "1896-1915," wherein is traced the marvellously rapid growth of the application of wireless telegraphy to the needs of modern civilization. The article is adorned by a large number of interesting illustrations, which start with an artistic headpiece epitomizing the successive notable steps in this progress of applied science. Reproductions of numerous historic pieces of apparatus are placed cheek by jowl with the most up-to-date examples. Among these pictures we may single out an actual photograph, hitherto unpublished, of the first paid wireless message ever transmitted. This consists of the Marconigram sent out from the Needles by Lord Kelvin in 1898.

WIRELESS TELEGRAPHY AND TELEPHONY, by Dr. A. E. Kennelly, is a book that every telegraph, telephone and wireless man should have. It gives in simple language an explanation of electro magnetic waves and their propagation through space (the air), also fundamental facts about wireless equipments. The price of this excellent work is \$1.00 per copy. Sold by TELEGRAPH AND TELEPHONE AGE, 253 Broadway, New York.

POCKET DICTIONARY.—Every telegraph and telephone student needs a dictionary of electrical terms, to explain the technical words he encounters in his studies, and the smaller such a book is the handier it will be. Such a work is the "Handy Electrical Dictionary"—complete, concise, convenient. It is small enough to slip into the vest pocket and is a revelation as to the scope and clearness of its contents. It is valuable for all practical telegraph and telephone men. Price fifty cents per copy for leather binding, and twenty-five cents for cloth binding. For sale by TELEGRAPH AND TELEPHONE AGE, 253 Broadway, New York.

The Associated Press—What It Is!

The Associated Press is a mutual and co-operative association of newspapers in the United States, formed for the purpose of gathering and distributing to its members the news of general interest, domestic and foreign, collected through its own members and other agents, including foreign news associations. Under its charter, and as its name indicates, it is not an agency for the sale of news, but an association for the co-operative collection of news and its distribution to its members. In its charter it is specifically set forth that it is not to make a profit nor to make or declare dividends, and is not to engage in the business of selling intelligence nor traffic in the same. In its organization it consists of approximately 900 newspapers, each of which contributes to the common budget all news of general interest originating in its territory and pays its share toward the expense of supplementing this stock of domestic news with



MELVILLE E. STONE, GENERAL MANAGER, THE ASSOCIATED PRESS, NEW YORK.

a foreign news service and maintaining the necessary executive and distributive machinery. The Associated Press was incorporated under the laws of the State of New York, May 22, 1900.

To gather the news of this country bureaus have been established at various central points, to which the members of the association send the news of general importance gathered by them in the territory for which each is responsible. The association also has its own staff of salaried correspondents at all important points and men subject to call throughout the country as well as skilled writers who are sent to report important events. The news gathered from all these sources is assembled at these central bureaus and from them it is sent out by telegraph or telephone to all the members of the Associated Press.

To supply its members with the foreign news of the world, The Associated Press has, in addition to its own special bureaus and correspondents, arrangements for the interchange of news with the three great European news agencies, which, with The Associated Press, cover the news field of the

entire world. As, in a sense, every editor, reporter and correspondent of an Associated Press paper and, through these foreign alliances, of newspapers throughout the world may be said to be an agent of The Associated Press, untold thousands of men in all quarters of the globe are the servants of the members of the association.

The gathering and distribution of the news would be an impossibility without the present perfection in telegraph, telephone, cable and wireless telegraph service. For its most important service The Associated Press has leased wires which form a net work of trunk lines across the country from Bangor, Me., and New York on the east to Seattle, San Francisco and San Diego, in the West, and from Duluth on the north to New Orleans, Galveston and Tampa in the south. The total mileage of this leased system is approximately: day wires, 22,000 miles; night wires, 28,000. Newspapers in more important cities are served by these leased wires; papers in towns not situated on these lines are furnished with news by means of the regular wires of the telegraph and telephone companies. Heavy use is made of commercial wires and of the ocean cables in the gathering and transmission of news and the wireless system is also utilized in the work of The Associated Press. The Associated Press owns no telegraph lines. More than 60,000 words are daily received and transmitted at each of the more important offices of The Associated Press. In events of great importance no expense is spared to have the most capable writers and correspondents on the scene in order to furnish the news promptly and completely.

To meet the expenses of this news service The Associated Press has need of an annual revenue of about three million dollars, which is derived from assessments levied upon the members of the association. As has already been stated The Associated Press sells no news and has no revenues from this source.

The principle of co-operation in newsgathering, of which The Associated Press is to-day the highest development, was first applied before the Civil War by New York City newspapers, which realized that each was paying a large sum for news that was accessible to all and might as well be gathered in common with no loss of prestige and great saving of cost. Provision was therefore made for a joint agency, to which each paper turned over any news of this character it received for distribution to all the members. The New York *Herald*, *World*, *Tribune*, *Sun*, *Times*, *Journal of Commerce* and *Express* were later parties to this agreement. Subsequently other papers outside of New York sought to buy this news and thus the New York Associated Press was formed, and was authorized to sell news, the customary contract providing that these papers, in addition to paying for the general news budget, should turn over to the New York association any news originating in their territory. The prime object of the New York Associated Press was to gather the news for the New York papers.

In the meantime papers west of the Allegheny

Mountains had established the Western Associated Press, a similar organization, incorporating it in Michigan in 1865, and in New England, New York State, Philadelphia and Baltimore papers formed minor associations, all of which contracted as the individual papers had done before to interchange news with the New York Associated Press, to which they had paid a bonus for the delivery of the general budget. This general alliance, centering in the New York Associated Press, became known as The Associated Press. It obtained European news through foreign agents and covered the domestic field by means of the allied papers and its own correspondents.

As this arrangement, however, permitted the New York papers not only to control its management, but also, by reason of the payments made by the dependent organizations, to obtain their own news practically without cost to themselves, dissatisfaction arose, culminating in 1882 with the revolt of the Western Associated Press and the establishment of a new alliance on more equal terms between the two associations, the expenses being more equitably shared and the management being intrusted to an executive committee on which both associations were represented.

This alliance continued for ten years until, in 1892, the charter of the Western Associated Press being about to expire, "The Associated Press" was incorporated under the laws of Illinois by members of the old organization. It took the form of a stock corporation, the stockholders of which, newspaper proprietors all, could hold no more than eight shares apiece, but in operation it was rather a mutual organization, the possession of stock not being essential to membership and a news service. The stock was very widely distributed, however, and a large share of the members were holders of stock with a voice in the election of a directorate of the company.

This form of organization proved satisfactory for a time, but in 1900, for a number of reasons, some of them based on legal technicalities, it was deemed impracticable to continue the organization. A large number of the more important and influential members withdrew and the corporation was practically dissolved. The organizers of the present association deemed it best, instead of having stock, to form a mutual association of all newspaper proprietors entitled to receive The Associated Press report, each member having a voice in the management. Thereupon the present organization was effected under the laws of the State of New York, on May 22, 1900, and headquarters of the organization were fixed in New York, where they are now located. Operative methods were not altered from those employed by previous associations having a similar purpose, the principal change being in management, in which all the members of this association share substantially. All the newspapers which were members of The Associated Press of Illinois subsequently became members of The Associated Press thus organized in New York, and many other new members have since been elected by vote of the directors or mem-

bers, the association having the same right to say who shall be admitted that any other mutual organization or club possesses.

Persons eligible to membership in the association are only the proprietors or executive officers of newspapers and are entitled to the report only for publication in their papers.

(To be Continued.)

New Book.

INVENTIONS AND PATENTS. By Philip E. Edelman. 288 pages. New York: D. Van Nostrand Company.

The subject of patents and patent practice is regarded by many laymen as inscrutable, and if perchance any of them invent something, they place themselves entirely in the hands of their attorney and do as he says, because of their ignorance of patent procedure. But there need be no more helpless submission of this kind, when such a book as Mr. Edelman's is available.

The volume is intended particularly for all persons interested in patents, either as inventors, investors, or manufacturers and the layman will find in it considerable matter of information and interest.

The patent system, as the author states, is misunderstood or at least incompletely understood by the very persons who are most vitally concerned. This has resulted in enormous waste of time and money in the developing and taking out of patents. It is the purpose of this book to guide those interested and to show the steps necessary and the mistakes to be avoided. The book answers such questions as, "Is it patentable?"; "What is the patent for?"; "Will it pay?"; "What do the claims mean?"; "What is infringement?"; "Can the patent be sold for profit?"; and many others which naturally arise in the mind of the inventor or promoter. The idea has been to provide a text and reference book for all persons interested in patents.

The scope of the work is a wide one, and covers the patent system from its inception and its practice up to the present time. The information it contains will certainly be of great value to the inventor, the investor and the manufacturer, and will be a sufficient guide to them all in determining questions in connection with patent work.

Copies of this book may be obtained of TELEGRAPH AND TELEPHONE AGE, 253 Broadway, New York, on receipt of \$1.65, which includes express carrying charges.

F. O. J. SMITH.—The *Portland (Me.) Express and Advertiser* recently published a picture of the late F. O. J. Smith, one of the early promoters of the telegraph. Mr. Smith, who died in 1876, was known to many old-time telegraph people. While a member of congress at the time professor Morse was seeking government aid for the introduction of the telegraph in 1843, Mr. Smith became interested in the invention and was instrumental in securing the government appropriation for the purpose, and afterwards became a partner in the enterprise with professor Morse and Alfred Vail.

The Morkrum Printing Telegraph System.

(Continued from page 18, January 1.)

Having traced out the method of selecting a combination in the lock-bank, we are now ready to consider the operation of the printer, which is purely local.

The circuits of the printer will be more easily understood if we first consider the mechanical actions of the printer in printing a letter.

The typewheel must first be rotated to the proper

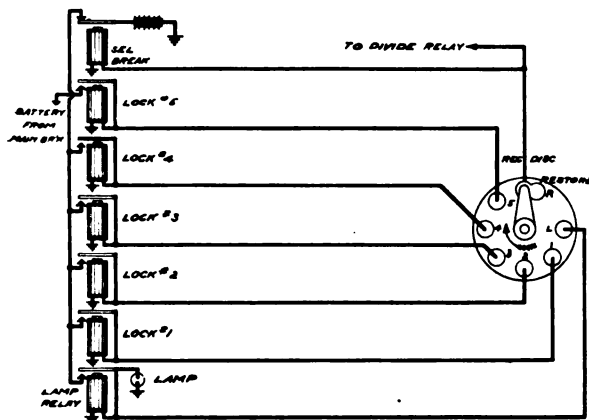


FIG. 10.—RECEIVER DISC AND LOCKING CIRCUITS OF LOCK RELAYS.

letter and then thrown forward against the paper to print.

There are two rotator magnets which turn the gear shaft by means of a segment and pinion. The gear shaft is connected to the typewheel by a pair of bevel gears and a universal joint. The typewheel is stopped opposite the different letters by means of the selector drum mechanism as follows: On the gear shaft, in front of the selector drum, there is an index lever. The drum contains a number of stop pins and there are four interference plates between it and the index lever. These interference plates are controlled by the plate relay solenoids,

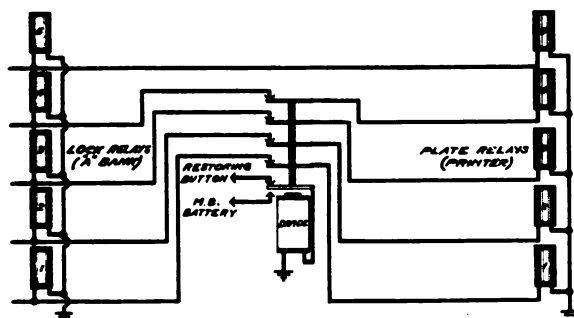


FIG. 11.—CIRCUITS FROM LOCKS TO PLATE RELAYS.

which are in turn controlled by the first four locks in the lock bank. In any setting they will allow two of the pins to pass through them when the drum is operated, owing to the holes in all the plates being lined up opposite these particular pins. The gear shaft will rotate either to the right or left according to which rotator magnet is operated, and will rotate until the index lever strikes a stop pin. This will bring the letter on the typewheel correspond-

ing to the pin, directly in front. The striker magnet is then operated and throws the typewheel against the paper and prints the letter.

Considering now the electrical circuits by means of which this succession of operations is accomplished.

At the left end there is a bracket on which are mounted eight relays. The lower four of these, in addition to controlling the distributing circuit, operate the solenoids which control the plates on the selector drum.

The two relays on the left of the upper row (Fig.

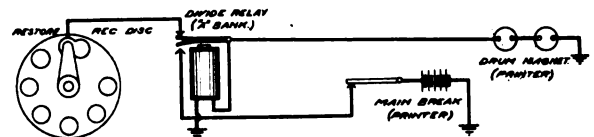


FIG. 12.—DIVIDE RELAY OPERATING CIRCUITS.

13) are the relays that are operated by the fifth lock. The magnets of these two relays are in series

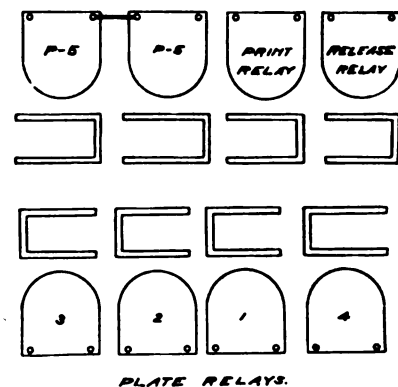


PLATE RELAYS.

FIG. 13.—ARRANGEMENT OF DISTRIBUTING RELAYS IN PRINTER. (Looking at the Printer from the back.)

so they act as a single relay. They are designated as P-5.

The plate relays (Fig. 14) lock themselves operated in the same manner as the lock relays. Their left-hand front contacts are connected to battery through the main break and the left-hand tongues

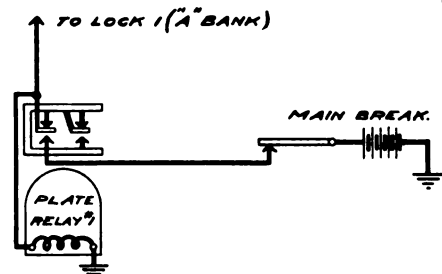


FIG. 14.—PLATE RELAY LOCKING CIRCUIT.

are connected to their own coils so that when a relay is operated battery from the contact flows into the coil and it is held operated until the battery is cut off by opening the main break.

The remaining tongues and contacts of P 1, 2, 3 and 4 and the four left-hand tongues and contacts of P-5 (Fig. 15) make up the distributing

circuit which determines what path the current in the printer shall take and what magnets shall be operated. In the case of letters being printed the path of the current leads through one of the rota-

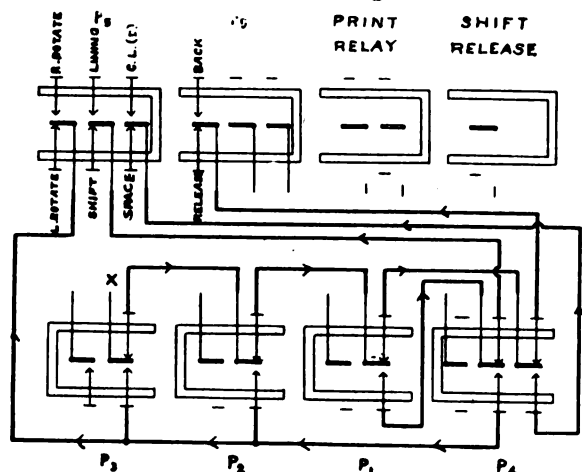


FIG. 15.—DISTRIBUTING CIRCUIT.

tor magnets which revolve the typewheel. In case the lining or other signal is received the path leads through the lining magnet or other magnet to perform the proper operation.

(To be Continued.)

The Bipolar Telephone Receiver.*

BY E. B. TUTTLE, ASSISTANT ENGINEER, THE BELL TELEPHONE COMPANY OF PENNSYLVANIA.

The telephone receiver contains a steel "horse-shoe" magnet "mm," which is a permanent magnet, that is, one which does not depend on an electric current for its magnetism.

Around the ends (poles) of this magnet "pp"

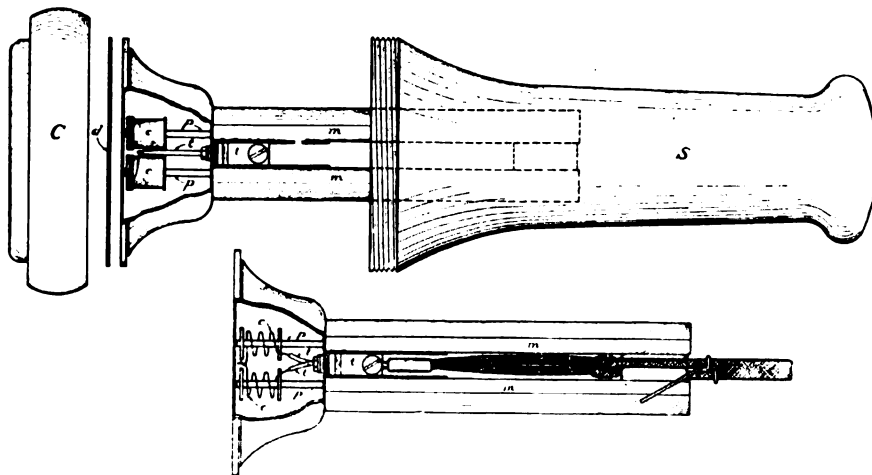
Over the opening in the shell of the receiver is placed a thin disk of soft sheet iron, which is attracted by the receiver magnet just as the sheets of steel are drawn to the electromagnets.

This alternating current set up by the transmitter passing through the receiver alternately increases and decreases the strength of the receiver magnet, thus alternately increasing and decreasing the pull on the receiver diaphragm. As the diaphragm is thin and easily sprung, it is set vibrating exactly in unison with the transmitter diaphragm which is causing the vibration in the battery current.

The sound which comes to the ear from the violin is produced by the vibration of the wood of the violin box vibrating in unison with the strings. So the sound heard from the telephone receiver is caused by the vibrations of the receiver diaphragm, produced by the changes in the strength of the magnets and in unison with the variations in the transmitter current which produce them.

The receiver shown in the figure is the standard type of receiver, with concealed binding posts "t," and which will gradually replace the other hand receivers as maintenance requires. As is shown in the figure, the metal parts of the receiver, that is the magnets, pole pieces, coils and diaphragm, are not attached to the receiver shell or cap, but are readily removable—a very great advantage in reducing the cost of repairs. This construction also permits of a very much more accurate setting of the magnets and diaphragm, because the parts connecting them are metal and rigidly connected to the pole-pieces.

The pull on the diaphragm increases very rapidly as it is placed nearer the magnets, and in order to secure as large movement of the diaphragm as possible the pole pieces are set very close. If brought too close, however, the diaphragm strikes the pole pieces, causing a rattle, or if it sticks tight, no sound at all. The separation is very slight indeed and any small particles of dust that get between may



BIPOLAR TELEPHONE RECEIVER.

are coils of fine wire "cc." Electric current in these coils of wire in one direction strengthens and current flowing in the coils in the opposite direction weakens the magnet.

* From *The Telephone News*.

cause a rattle or perhaps blocks the motion altogether. One of the first things a troubleman does when inspecting a telephone is to remove the receiver cap and diaphragm and carefully wipe and blow all dust from the ends of the pole pieces.

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REMITTANCES to Telegraph and Telephone Age should be made invariably by draft on New York, postal or express money-order, and never by cash loosely enclosed in an envelope. By the latter method money is liable to be lost, and if so remitted is at the risk of the sender.

BACK NUMBERS of this journal three or more months old will be charged for at the rate of 25 cents per copy. Issues over one year old, 50 cents for one copy, but where two or more copies are purchased, the price will be 25 cents per copy.

BOUND VOLUMES of Telegraph and Telephone Age for 1913, 1914 and 1915 are for sale at the office of this journal, 253 Broadway, New York. The price is \$3.50 per volume, sent by express, charges collect.

Cable Codes.

The office of TELEGRAPH AND TELEPHONE AGE is headquarters for all cable cipher codes. Telegraph managers would do well to bear this fact in mind when customers make inquiries regarding such codes. We are prepared to furnish full information on the subject, our knowledge being based on thirty-five years' experience in handling the hundreds of codes on the market.

NEW YORK, JANUARY 16, 1916.

An Extraordinary Cable Situation.

Probably never in the history of cable telegraphy has there been a situation so equal that existing at the present time. The facilities are so heavily burdened with business that the companies have been compelled to suspend deferred and cable letter service for the time being. The land lines in England, Ireland and Europe have been crippled by storms to such an extent that there has been a virtual blockade of business and not until these lines are restored, can the cable companies hope to straighten out the tangle.

Cable business has been exceedingly heavy for some time and all companies have been taxed to their utmost to keep it moving, but when our old enemy Boreas shakes his wintry locks, something happens to upset man's plans and plants. He has been active in this country of late, too.

Printing Telegraphs for Business Correspondence.

The development of printing telegraphs up to this time has been mainly with the idea of benefiting public service companies operating telegraph lines, but a wide field of application for these systems looms up incidentally and no doubt has received due consideration by the interests concerned. We have in mind the availability of some of such

systems for the use of privately controlled industries in transmitting long communications between headquarters and branch offices at distant points.

One of the principal objects aimed at in the development of printing telegraph systems has been to make them so simple that anyone with ordinary intelligence and without previous training could manipulate the apparatus. This object has been attained with a large degree of success and we see no reason why the apparatus would not be a very valuable adjunct to a large private business concern in the manner already indicated. With such a system available, probably most of the correspondence which is usually entrusted to the mails could be telegraphed and much time thus saved.

The telephone, of course, is used for quick communication between widely separated points, but with a printing telegraph system, details could be transmitted that would not be attempted by telephone and what is of great importance, is that a copy of all correspondence is made at the time it is transmitted.

The printing telegraph systems, it seems to us, have a wide field of application apart from their use by telegraph companies and their growing utilization on railroad wires, and large private industries could be made more efficient by using such a system and eliminating the slow mails as a means of conducting correspondence. This is a promising field for future development.

United States Censorship.

Major general Hugh L. Scott, U. S. A., chief of staff, in his annual report recommends that an officer of the army designated by the secretary of war and an officer of the navy, designated by the secretary of the navy, be directed to consult with representatives of the press associations and managers of leading newspapers of the country in drafting legislation, authorizing the president to issue regulations for control of publication and censorship of telegraph, cable, wireless and mail communications, wherever such course may seem to him necessary for the defense of the country.

It has been charged that the English censorship lacks organization. No less than five government departments are concerned in the British telegraphic communication systems, yet no board has ever been established whereby representatives of each department can meet together to discuss and settle issues concerned with the subject of censorship.

LIABLE FOR MESSAGE TOLLS ONLY.—A recent rescript from a Maine law court, holds that a telegraph company is only liable for the amount paid for tolls, in a message in which a mistake was made in transmission over the wires of another company.

MEN NIGHT MESSENGERS IN PENNSYLVANIA.—In compliance with the new child labor law in Pennsylvania, men telegraph messengers have supplanted boys for night service in Pittsburgh and other places, coming within the provisions of the law.

General Notes on Grounding.*

BY H. M. WOLF, SALT LAKE CITY, UTAH.

This article will deal only with the practical side of grounding, i.e., the making and testing of grounds; the history or necessity for grounding will not be discussed. It has been the general practice to make use of treated surface grounds, i.e., ground elements placed only a few feet in the earth and then treated with some sort of solution, usually salt water.

The writer has attacked the grounding problem from a different angle, and the following are the different types of grounds arranged in what he believes to be the order of their relative importance. The series is arranged on the basis that the most satisfactory ground is the one that gives the best results with the least expense and trouble.

(1) Grounds to water systems, where proper conditions permit, are the cheapest and best type.

(2) Grounds located at a permanent water depth.

(3) Grounds located at a permanent moisture depth.

(4) Treated surface grounds.

(5) Untreated surface grounds.

It has been truly remarked that a poor ground is worse than none; and an untreated surface ground is absolutely worthless in most cases, for the contact resistance is too high, varying possibly from twelve ohms where the permanent water strata is close to the surface to 250 ohms in dry season where water is not close to the surface.

Omitting, for the time being, consideration of grounds to water systems, there remains the choice between the ground placed at permanent water or permanent moisture depth and the treated surface ground. The ground element placed at permanent water or moisture depth will be under uniform conditions throughout the year, and will require no upkeep or testing until sufficient years have elapsed to wear away the pipe. The ground element placed at permanent water depth will offer a constant resistance of from twelve to twenty ohms, and the ground element placed at permanent moisture depth will cause a resistance of from eighteen to forty ohms. The cost of placing these ground elements will vary over a wide range, depending upon the depth to which the pipe must be driven and upon the nature of the soil; but an average cost for placing about 800 of these grounds at a possible average depth of twenty-seven feet, under varying soil conditions, was about \$5.00. This figure includes labor and material, and placing wire on the pole, and testing the resistance of the ground.

When a pipe is placed at permanent water or moisture depth, the current discharged to the ground cannot dry out the earth surrounding the pipe because of the excess amount of moisture present; but with the treated surface grounds, where the soil is dry, it is possible for the current to dry out the soil surrounding the pipe, thereby causing a rise in the contact resistance.

*Extracts from article in *General Electric Review*.

The treated surface ground is subject to varying qualities as a ground; and it requires systematic and regular testing until the variables can be determined and the conditions of maintenance and upkeep standardized for each kind of soil. The life of the pipe is shorter where grounds are treated than where they are not treated, and it is believed that the difference in life is quite noticeable. To maintain a reasonably constant contact resistance, one ground will require more salt than another and will require the replacement of the salt more often than another, due to differences in the compactness of the soil and the amount of moisture it contains. A heavy rainfall with a loose earth soil will wash a considerable quantity of salt away from the ground element; and, when the soil again dries out, the contact resistance will show an appreciable increase. The change of the seasons will affect the contact resistance due to the fact that frozen soil is of higher resistance than that which is not frozen. For this reason it is desirable to sink surface ground elements to a depth of at least eighth or ten feet; a greater depth will be productive of good results. These ground contacts might vary in resistance from one to five to forty ohms, and even up to 250 ohms if not properly salted.

For ordinary grounding purposes it is believed that a ground contact resistance of not more than twenty ohms is satisfactory; but lower contact resistances are desirable in connection with abnormally heavy currents or large electric station equipments. The average contact resistance where one pipe is placed at permanent water depth is between twelve and twenty ohms, depending upon the size of the ground element, its depth in the ground, and more especially upon the kind or nature of the soil. If the necessary expense is justified, this resistance can be lowered to one ohm or even less by placing additional ground elements in multiple or by treating the earth directly surrounding the ground element with solutions to increase its conductivity.

It is generally conceded that the earth has no resistance except the contact resistance which is generally taken as the resistance between the ground element and the earth directly surrounding the ground element.

The grounding problem then resolves itself into one question, that of what is the allowable ohmic resistance of contact. This will be determined by the requirements of the particular case and the cost of obtaining the desired results under the existing soil conditions.

It would seem apparent that from the data already given that a satisfactory ground could be obtained at any place under any soil conditions, but this is not always possible. Where rock is within a few inches or a few feet of the surface, or where the soil is of boulders as in old river beds, it is impossible to get low contact resistances and a wire will have to be run to some point where a proper ground can be made.

The earth crust is made up of rises and depressions in the stratified layers of soil and these depressions are generally filled with loose soil which,

from all outward appearance, seems to offer a satisfactory ground; and in many instances seepage water is held in these depressions. These conditions sometimes give satisfactory grounds, but it is necessary to test to another ground sufficiently removed to determine the actual grounding value of such an earth contact.

The following facts are generally agreed upon by those having made extensive ground tests.

(1) Assuming a uniform soil and moisture condition, the contact resistance is not materially lowered by increasing the depth of the pipe in the ground after the pipe has reached a depth of about eight feet. Placing the pipe sixteen feet deep, instead of eight feet, would likely lower the contact resistance only six to twelve per cent.

(2) The size of the pipe to be used should be determined from the mechanical conditions of driving and the possible saving due to the longer life of a larger pipe, but not from the difference in contact resistance due to increased surface, for doubling the size of the pipe gives only six to twelve per cent lower contact resistance.

(3) Driving pipes near together, say a few inches or a foot apart, is equivalent to driving one pipe of the larger size; pipes driven not less than six feet apart, when connected in multiple, will give a combined resistance inversely proportional to the number of pipes placed.

(4) Ground elements can be tested with either direct or alternating current with equal accuracy, for there is no inductive or capacity effects introduced.

RELATIVE VALUE OF COPPER PLATES AND IRON PIPES.

Copper Plates

(1) Costly to place at any great depth.

(2) Cost of placing copper plates six to eight feet is greater than cost of placing iron pipes to the same depth, and the cost of the copper itself is greater than the cost of the pipe.

(3) Have a short life in the ground.

(4) Large contact surfaces are readily obtainable with copper plates, but increased surface within closely defined areas gives but little decrease in contact resistances.

Iron Pipes

(1) Easy and cheap to place, even to a considerable depth.

(2) Comparatively long life in the ground—galvanized pipe will last from ten to twenty-five years, possibly average fifteen to eighteen years.

(3) Satisfies all the requirements of a good ground element.

VALUE OF CHARCOAL OR COKE.

Charcoal or coke has no value where ground elements are placed at permanent water or permanent moisture depth, as they are not of especially low resistance and only serve to hold moisture. With treated surface grounds the charcoal or coke serves a useful purpose when placed around the ground element. Probably the best results can be obtained by using charcoal or coke of about one

inch size and, after mixing it liberally with some sort of loamy soil, filling it in about the ground element to a depth of possibly six or eight inches. The use of charcoal or coke with an untreated ground is not productive of good results, and it does not materially add to the value of the untreated surface ground.

WATER SYSTEMS FOR GROUNDING PURPOSES.

Where the water system is of metal pipe, this usually offers a very satisfactory grounding medium, under certain restrictions; but, where the mains are of wooden pipe and only the laterals or services are iron, the water system should not be used as a ground.

The restrictions that were referred to are as follows: First, where a water system is to be used as the ground, the attachment should be to one of the main pipes and it should be made by means of an iron band or clamp fitted around the pipe so that local electrical action will not take place between the copper fastening wire and the water main but between the wire and the clamp. Second, the copper or iron wire running from the pole to the water main should be encased in a galvanized iron pipe to (a) mechanically protect the wire from being broken, and (b) in the case of copper wire being used, to increase the life of the copper by offering a more electro-positive surface than the copper. Third, an emergency ground element of reasonable grounding quality should be placed so that the opening of the water mains at any point will not relieve the circuit of a ground or endanger the workman on the mains.

SOIL CONDITIONS AND THE TYPE OF GROUND.

Assuming that it is desired to place a ground element, the procedure should be as follows:

First, determine insofar as is possible these features concerning the character of the soil; its depth, formations at different depths, depth to either surface or live water, different height of surface or live water at different seasons of the year, and the amount and depth of permanent moisture. It is surprising how much information there can be obtained on these subjects as the result of effort in asking a few questions and making a small amount of careful observation. There are usually wells in most places that give considerable data; then, also, well drillers and city or county engineers are usually more or less liberally supplied with data along this line.

PLACING GROUND ELEMENTS.

Driving a pipe to permanent water or moisture depth offers unusual difficulties only when a considerable depth must be reached. The general practice is to drive the pipe with a hammer, the lineman swinging the hammer from the pole; but the writer has made up a special hammering ram by attaching a guide pipe to a weight and operating the device by means of a rope through a pulley attached to the top of the pole or a cross-arm. A complete hammer of this kind can be made up for about \$8.00 and will prove a great

saving in time and labor. A 50-lb. hammer is used with $\frac{3}{4}$ -inch pipe for all grounding purposes, except for special soil conditions where the $\frac{3}{4}$ -inch pipe bends too easily and a $1\frac{1}{4}$ -inch pipe is used. This latter is driven with a 100-lb. hammer. This standard has been arbitrarily chosen and has given good results.

In placing treated surface grounds, it is recommended that a hole about eight inches in diameter be drilled to at least eight or ten feet depth, and if possible to fifteen feet depth. A galvanized iron pipe not smaller than one inch diameter (preferably $1\frac{1}{4}$ or $1\frac{1}{2}$ inches in diameter) should be placed in the center of this hole and a mixture of charcoal or coke with loamy soil tamped in about this pipe for at least six feet in height. The rest of the hole can be filled with the earth that was removed. To treat the pipe with salt, pour a liberal amount of salt water around the pipe and, after the ground has dried out on the surface, sprinkle a reasonable amount of salt on the ground in a ring about the pipe, allowing possibly eighteen or twenty-four inches clearance from the pipe to protect it from a concentrated chemical action at the surface. The salt will then be carried into the ground with the rainfall and will maintain a low resistance contact. The salt will have to be replenished from time to time and tests should be made to determine the average varying conditions, from which a practice can be established in accordance with the requirements.

Telegraphing by Eye Winks.

BY FRANK A. STUMM, HACKENSACK, N. J.

Under the caption "Telegraph Oddities" in your issue of December 16, 1915, it is stated that Mr. Edison has a scheme for telegraphing with his eyelids—a quick wink signifying a dot and a long one a dash.

I have noticed for some years the growing practice of the publishers of newspapers, but more particularly of magazines, ascribing all of the current as well as many of the ancient end-men jokes and bon mots to some one or other of the present numerous coterie of men already overloaded with wealth and reputation for greatness—let us hope this forced plagiarism shall not extend to inventions by those who never become rich or powerful in any continuous limelight degree.

It is hard to believe that Mr. Edison is ignorant of the actual practice of this art, or use of the eyelids which occurred at Camp Lincoln, the nearest point to Richmond General McClellan ever reached, four miles away.

At that time Jerome Bonaparte and Prince Salm-Salm were on the General's staff. Their tent was on higher ground and about 400 feet from the tent of the headquarters' operators—Harper Caldwell was at the latter and Jesse H. Bunnell at the prince's tent. Harper noticing some commotion up there, put a field-glass to his eyes and Jesse followed suit. Then Harper lowered his glass and with the index finger of his free hand pointed, at close range, to his eyelids and Jesse

at once got dots and dashes asking, "What's the matter up there?"

Jesse replied, "They are in a devil of a stew because they can't find their field-glasses and want them quick."

Caldwell replied, "Tell them they left them down here. I'll send them up at once."

Jesse delivered the information, when the two staff officers, ejaculated in great astonishment, "But how the deuce did Caldwell know we were hunting them?"

Answers to Questions.

[Readers of TELEGRAPH AND TELEPHONE AGE are invited to ask questions on matters relating to telegraphy and telephony which they would like to have explained. Such questions must be bona fide and signed by the person seeking the information. These names, however, will not be published.]

(34) Q.—As electrical generators are now extensively used in the place of chemical batteries, please state the advantages these machines possess over batteries. A. E. G.

A.—The main advantages of generators are: (1) Small internal resistance and consequent capacity to feed several separate lines without interference, and (2) economy both in space occupied and in cost of maintenance.

(35) Q.—Is it possible to magnetize a bar of steel so that there will be only one pole? T. K. O.

A.—No; it is impossible to obtain a magnet with only one pole. If we magnetize a needle or any other piece of iron or steel, by rubbing it on one pole of a magnet, we shall find that after magnetization it has two poles, north and south, as though both ends had been rubbed on the north and south ends of the magnet. One pole cannot exist without the other.

(36) Q.—The question has arisen in my mind as to whether the resistance of a wire increases, when the current it carries is increased. Will you please enlighten me on this point and oblige. P. N. O.

A.—If a wire is kept at an unvarying temperature, its resistance is the same whether a large current or a small current be flowing through it. For example, if a wire has a resistance such that when a difference of potential of, say, ten volts is applied to its ends, a current of two amperes flows through it, (the resistance in this case being five ohms), it will be found that if one volt be applied instead of ten, the current will be 0.2 amperes, the ratio between volts and amperes being five as before.

(37) Q.—When and between what points was the first Atlantic telegraph cable laid? W.

A.—On August 5, 1857, the steamers *Niagara* and *Agamemnon*, started to lay the first cable, from Valentia, Ireland, to Newfoundland; but after paying out over 300 miles, the cable broke and was lost. A second attempt was made in June 1858. This time the cable was joined in mid-ocean, the *Niagara* proceeding toward Newfoundland and the *Agamemnon* toward Ireland. After several mishaps the laying was completed and the cable put in operation, August 5, 1858. A serious fault developed in the insulation and the cable ceased working September 1, 1858.

Efficiency Engineering in the Telegraph Service

(Continued from page 10, January 1 issue.)

It is pleasing to note that the paragraph explaining efficiency as applied to the individual in the management of his personal affairs, has been so favorably received. No doubt hundreds of persons in the telegraph service are now practicing systematic saving. One individual writes us that the envelope method of distribution has already taught him a very valuable lesson in efficiency. He now has his income properly measured so that it adequately meets all his requirements. Future advancements, he states, will be wholly applied to investments and savings. This is a gratifying condition. Those who are not familiar with this subject will do well to look up the reference to it, as published on page 577, December 16, 1915, issue.

An official has this to say: "I cannot refrain in writing you to give expression to an idea for consideration. Your paper is such a fine one, making for the betterment of both employer and employe, that any good thought thrown off may be utilized at some time to advantage. It is said that when a man is living in the past his present usefulness is waning, but be that as it may, I cannot help comparing the telegrapher of to-day with the telegrapher of my boyhood and young manhood and the conclusion is forced upon me that while in many ways there have been improvements, ethically speaking I think the advantage lies with the old-school boys. In the earlier days it was an honored distinction to be considered first class—it could only be earned by actual performance and rested upon what an operator could send and receive in an hour's time. The operator was concerned only in the faithful performance of his duty and this consisted of the best he could do. No man ever makes a mistake in letting injustice lie with the other fellow. Every man has the right to work, to live and share in the general prosperity and there is no law giving any man the right to appropriate all to himself. All are therefore justified in caring for their rights, but they can never be protected or conserved by being unfair or unjust to others. These thoughts have been forced upon me time and again during the last ten years, owing to the attitude of operators in not giving an honest expression to their talents, but rather measuring them out in accordance with instructions from others than their employing interests, of what is right and disregarding totally the expectation of the employer as to his rights. All this can no doubt be remedied. It will have to be brought about by an attitude of absolute fairness and one of concern for the employe as much as for the shareholder of a company."

Telegraph engineers are often at their wits' end to devise a method of disposing of accumulated business. After communication has been restored between two points, the messages are not disposed of as rapidly as they should be. Everyone concerned appears to know but no one seems able to remedy the fault. A first-class operator is perhaps

located at the sending office and a second-class operator at the receiving end of the wire, or perhaps the man at the sending end of the circuit concludes that he is working at a speed commensurate with his pay and the accumulated business is therefore nothing to him. How can ways and means be provided to meet such a condition with justice to the employer and the employe?

There are standard methods of managing men, that is, measuring their capacities for work and where they can best be utilized to render the best service. This is perhaps more true in the telegraph than any other business. The reason is obvious. An operator may be assigned to a wire with fifteen way offices and he is required to work with that number of operators of varying abilities. In the course of time he understands them all. He knows their ways and peculiarities. He can read them as he would a book. He is master of the situation and renders a good account of himself. He is a good asset to his employing interests. Another operator more expert in every way but lacking judgment is assigned to this wire for a day and chaos reigns. He cannot adapt himself to the prevailing conditions. Between 250 and 300 messages are usually handled on the circuit each day. He does not see how it is possible to accomplish this work. The regular man thinks it is easy. So it is. It is easy because he has made the exact conditions a study and he knows how to act in all emergencies.

In the railroad service there are several classes of business. There are important messages that must precede those of less importance. It is a common complaint that when a railroad operator gets possession of the circuit and he has disposed of his important telegrams, he does his utmost to retain possession of the wire until he has transmitted all of the less important messages, to the detriment of the service in general by preventing other offices having important telegrams to forward from getting possession of the circuit. A good remedy for a condition of this kind is to allow each office to have the circuit either ten, fifteen or thirty minutes, when the wire is to be turned over to the next office entitled to the circuit. In this way, preference is naturally given to the most important business on hand. Some offices close at 6 P. M. It is the delight of others to so manipulate the business as to prevent the early closing office from disposing of his messages when the closing hour arrives. Frequently he has to call the office for which he has business from ten to twenty minutes which is all wrong and which could be avoided if each one concerned would simply study conditions. Everyone on the circuit knows which are the early closing offices and they should be looked after.

One important condition entering into efficiency is taking care of the plant so it can be utilized to handle the business when offered. To do this, of course, requires an interest as well as a working knowledge of the office. The manager or wire chief is not the only person, by any means, who can obtain these results. The operators are the principal factors. Assuming that all up-to-date facili-

ties are furnished to the operators, the subject of harmony becomes paramount.

One railroad authority writes us, that on several occasions he has detected crosses between railroad and commercial wires and, as it happened, had a patch wire idle which enabled him to throw out one of the wires, making it good with the patch wire. He notified the lineman of the matter before the commercial wire chief was even aware of the trouble.

One condition, hard to bring about, is for the testing office to have absolute control, as far as possible, of all circuits entering into any one city. A loop between different railroad lines should be arranged so that both sides can be brought into the switchboard for patching purposes, for sooner or later the condition will arise when both sides of that loop will be very badly needed, when one of the lines is interrupted by wrecks, washouts or other well-known causes.

Installing of the pin-jack switchboards has furnished something which small offices never had before, and that is a blue print of the switchboard at each testing station where they are installed. Having these blue prints at hand, an operator at small stations has been led to make patches as directed from the distant test office, when the operator at the testing board was himself unable to make the patches correctly. In this connection it is a good plan to have the instrument jacks of intermediate stations labeled "Relay" and "Key," as it is a help when conditions arise as mentioned.

(To be Continued.)

Construction and Repair of Telegraph Lines.

(Concluded from page 22, January 1.)

Report must be made at once by telegraph or telephone to the superintendent whenever a person is injured, and prompt attention should be given to the injured one, so far as is actually necessary. If instructed to continue the salary during disability, send the salary and expense vouchers to your superintendent for reimbursement by the legal department. Time allowed on account of injuries must be separated from the allowance for time during which work was performed. Foremen must send as early as practicable full details of any accident. If injuries are fatal instructions should be asked for. No promises to pay doctors' bills, hospital expenses, or to continue salary, or of any kind whatever should be made without proper authority first had. As soon as possible after the accident a form must be filled out in full, signed by the person in charge of the work, or by the office manager, where accident happened, and mailed to the superintendent.

Reports of accidents must be accompanied by written detailed statements (which should be obtained at once, or with the least possible delay) as follows:—

- (1) From the injured person, as to cause of accident and the extent of his injuries;
- (2) From the physician who gave first attention;

(3) From each person who witnessed the accident (including both bystanders and employees), describing it in detail;

(4) From other employees who were present and who did not witness the accident, to the effect that they did not witness it.

Each one who heard any statement made by the injured person should quote such statement in his written statement. All statements must be signed with full names and addresses.

The foreman will take charge of broken cross-arms, brackets, poles, or other appliances and preserve them until instructed as to their disposition. For convenience in preserving the broken section, poles may be sawed about two feet on either side of the break.

First American Telegraph Company.

BY J. E. HALL, RICHMOND, VA.

In reading "The Telegraph in America," by the late James D. Reid, which is a very interesting book, I find that the first telegraph company brought into existence after the building of the experimental line from Washington to Baltimore by the government, was called "The Magnetic Telegraph Company," and was for the purpose of extending the line to New York.

It was chartered May 15, 1845, under the laws of the State of Maryland. The work was finished early the following summer and the board of directors met for the purpose of organization, June 5, 1846. At this meeting one of the duties assigned the president and, naturally, through the president, all other officials, was "The Duty of Making the Business Agreeable to Those Engaged in It and to Endeavor to Crown It With Honor and Success" (page 124).

So far as the writer's knowledge goes, this benignant rule has always been one of the leading tenets of the several transmitting companies during the past thirty-five or forty years, and at no time has it been more zealously observed than at the present time.

As one of the rank and file I wish to commend this early rule to my fellow-employees everywhere and in all departments, observing that they can do much toward making it a success in its broadest sense, and it is a service the company for which you work has a right to expect.

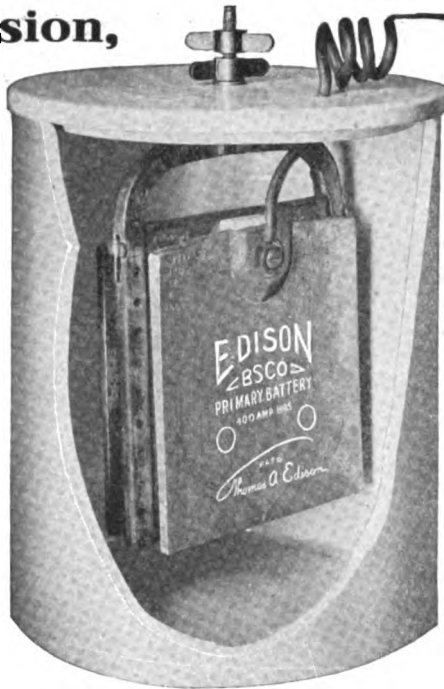
"PLEASE REMIT" are said to be the two most distressing words in the English vocabulary.

ALL ROADS LEAD TO NEW YORK.—A telegrapher who returned to a western city after a visit to New York, was asked how he found the metropolis. He remarked, "Easily; that is as far as the train went."

Mr. W. L. MacLellan, an old time telegrapher now identified with banking interests in New York City, writes: "One of your agents thought that I needed the AGE and he placed my name on his subscription list. I guess he was right. Here is the necessary \$2.00 to keep it going. It is a good investment."

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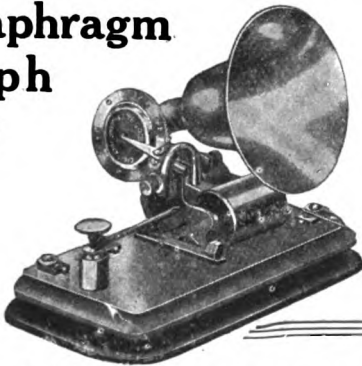
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THE RAILROAD.

MR. E. C. KEENAN, general superintendent of telegraph, New York Central Lines West, Chicago, Ill., was a recent New York business visitor.

LACKAWANNA WIRELESS.—During one of the recent sleet storms when the wires were down, the wireless system on the Delaware, Lackawanna and Western Railroad, was found to be an excellent substitute in maintaining communication between New York and Scranton. Mr. L. B. Foley, superintendent of telegraph, states that the wireless in such emergencies has proven to be a good investment.

TELEPHONE DISPATCHING ON TEXAS AND PACIFIC.—In the fall of 1914, the Texas and Pacific Railroad Company installed its first telephone train dispatching circuit on the seventy-mile division between Fort Worth and Whitesboro. This installation proved so satisfactory that a ninety mile division from New Orleans to Addis, La., was similarly equipped and put in operation last summer. The railroad has since then given the Western Electric Company orders for a full equipment for a similar system on its eastern division, between Marshall to Fort Worth, Tex., a distance of 177 miles.

Death of S. A. D. Forristall.

S. A. D. Forristall, aged fifty-five years, superintendent of telegraph of the Boston and Maine Railroad, Boston, Mass., since 1895, died in that city January 10, after an illness of more than a year.

Mr. Forristall was born at Troy, N. H., September 10, 1861. He began his telegraphic career in that place in June, 1875, and worked at various points on the Cheshire Railroad until August, 1877, when he went with the Eastern Railroad as substitute operator. His next position was at Gardner, Mass., for the Fitchburg Railroad, then with the Old Colony Railroad at Clinton, Mass., the Central Vermont Railroad at Bellows Falls, Vt., and for the Western Union Telegraph Company at Worcester, Mass., and Fabyan House, N. H. He returned to the Eastern Railroad in 1879 as operator at Revere, Mass., becoming train dispatcher in 1881.

On the lease of the Eastern Railroad to the Boston and Maine Railroad, he became chief dispatcher on the western division and served in that capacity from July 6, 1885, until April 15, 1895. On May 1, the same year, he succeeded H. N. Rowell as superintendent of telegraph of the Boston and Maine, which position he held at the time of his death.

Mr. Forristall was a member of the Association of Railway Telegraph Superintendents.

TWENTIETH CENTURY MANUAL OF RAILWAY, COMMERCIAL AND WIRELESS TELEGRAPHY is the title of a practical book for railroad telegraph men and despatchers, by F. L. Meyer. Every branch of the service has been handled in a practical and masterly manner, and the information given is the result of wide observation and experience. It is

a complete education in railroad telegraphy, from first principles to the finished operator, who can be relied upon to do things in emergencies. It has a chapter on wireless telegraphy. Price \$1.00. For sale by TELEGRAPH AND TELEPHONE AGE, 253 Broadway, New York.

New York Telegraphers' Aid Society.

The statement of the New York Telegraphers' Aid Society for the quarter ended December 6, 1915, is as follows:—

Balance on hand September 6	\$25,419.83
Receipts	1,593.50

Total, \$27,013.33

Disbursements:—

Death Benefits	\$600.00	
Sick Benefits	824.00	
Expenses	211.95	\$1,635.95
Balance on hand December 6		25,377.38

Total, \$27,013.33

RELIEF FUND.

Balance on hand September 6	\$6,057.16
Receipts	427.60

Total, \$6,484.76

Disbursements	\$408.00
Balance on hand December 6	6,076.76

Total, \$6,484.76

MILITARY TELEGRAPH CORPS ANNUAL REPORT.—The annual report of the Society of the United States Military Telegraph Corps, just issued, which was referred to in our January 1 issue, is full of historic interest and is a book of extraordinary merit. Interested parties can obtain copies at cost—seventy-five cents each—while the supply lasts. Apply to Mr. D. H. Bates, secretary, 658 Broadway, New York.

ELECTRICAL MEASUREMENTS AND METER TESTING.—This important subject is covered in a very complete manner in the book entitled "Electrical Measurements and Meter Testing," by D. P. Moreton. It is written in plain English for the student and the practical man. It explains the fundamental theory, practical applications and gives many examples. Price \$1.00 per copy. For sale by TELEGRAPH AND TELEPHONE AGE, 253 Broadway, New York.

PHILLIPS' CODE has been recently revised and brought up to date. Any telegrapher is placed at a disadvantage if he cannot use this standard code. It is in daily use by the press associations and by hundreds of commercial operators all over the country, and is the standard form of telegraph abbreviations. Anyone familiar with Phillips' Code can report meetings, sermons, addresses, speeches, etc. Price \$1.00 per copy. For sale by TELEGRAPH AND TELEPHONE AGE, 253 Broadway, New York.

Principles of Wireless Telegraphy.*

When a Leyden jar discharges under certain conditions into the aerial of a wireless system, portions of the energy of the current or discharge are thrown off from the conductor and do not return to it, but go traveling through space.

If a current is sent through a circuit, the magnetic field increases as the current increases, the magnetic lines enlarging and spreading outward from the conductor like the ripples on a pond. If the current is decreased, the magnetic lines all return and close up on the conductor, the energy all being re-absorbed into the circuit.

If electrical oscillations of extreme rapidity such as those generated by a condenser discharge, are



FIG. 1.—ELECTRIC WAVES

substituted for a current slowly rising and falling, part of the energy radiates into the ether as electromagnetic waves and only a part returns.

The discharge of a Leyden jar or condenser oscillates only when the circuit contains a certain amount of capacity and inductance in proportion to the resistance of the circuit. Circuits containing a certain amount of inductance, capacity and resistance tend to oscillate electrically at a certain frequency.

The electromagnetic waves thrown off by the aerial system follow the contour of the earth and so may cross mountains or travel anywhere. The waves emitted by the ordinary wireless station, making use of an aerial and a ground are half waves terminating in the earth. In passing over the earth they are accompanied by ground currents which waste a certain amount of their energy in overcoming ohmic resistance, and so reduce the intensity of the waves. For this reason propagation is always the best over water or moist earth whose resistance is low.

A further peculiar weakening of the waves is due to absorption by the air during sunlight. The difference between the strength of signals in daylight and at night is very marked, being much stronger at night.

Wireless telegraphy as practiced to-day is merely a method of setting up electromagnetic waves in the ether and then detecting their existence at a distant point. It may be divided into four distinct and individual operations, namely:

1. The generation of electrical oscillations.
2. The transformation of electrical oscillations into electrical waves.
3. The transformation of electrical waves into electrical oscillations.
4. The detection of the electrical oscillations.

Electrical oscillations may be generated by the discharge of a Leyden jar or a condenser. In

order to perform the first two operations named, it is necessary to arrange a condenser in such a way that it is most effective.

The induction coil or transformer is employed to charge the condenser because the currents of these instruments are much more powerful than those of a static electric machine. The induction coil is connected to a set of batteries and a key, so that the periods during which the current is on and off, may be controlled at will by the pressure of the fingers.

The secondary of the coil is connected to a battery of Leyden jars or a condenser. A certain amount of inductance in the circuit is necessary for the production of electrical oscillations. This is furnished, or at least the greater part of it, by a device called a helix, which consists of a coil of heavy wire wound around a suitable framework.

The spark discharge takes place across a device called a spark gap.

When the key is pressed, the high potential currents of the induction coil, charge the Leyden jar or condenser and cause it to discharge through the helix and across the spark gap. High frequency oscillations are immediately created in this part of the circuit. The spark gap, condenser and that part of the helix included, constitute the closed circuit. The electromagnetic waves thrown off by

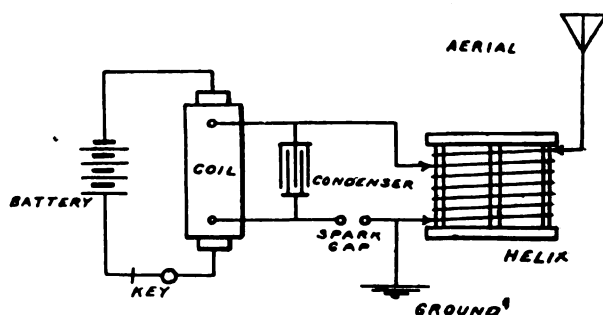


FIG. 2.—DIAGRAM OF WIRELESS TRANSMITTER

such an oscillatory system would not be very far reaching in their effects, because the disturbances would be confined to the immediate neighborhood of the apparatus, so recourse is had to the aerial and ground. The aerial consists of a network of wires elevated high in the air. The ground or earth connection is simply a large metal plate, buried in moist earth or thrown into the sea. By connecting the aerial and ground to the helix in the proper manner the high frequency currents are caused to surge up and down the aerial system into the ground and create very powerful electromagnetic waves, which possess the power of exciting electrical oscillations in another aerial, even though it may be located many miles away.

The existence of these oscillations is made known to the receiving operator by a device called a detector.

Mr. J. C. Glade, manager of the Western Union Telegraph Company at Cairo, Ill., writes: "Your kindness in renewing my subscription appreciated. I am herewith attaching check to cover same."

*From "Lessons in Wireless Telegraphy."

WALL STREET NOTES.

EDITED BY F. M. MCCLINTIC.

A Personal Word from Mr. McClintic.

Having become associated with Messrs. J. B. and T. R. Taltavall in the conduct of TELEGRAPH AND TELEPHONE AGE, I will endeavor to make the items of personal interest in my department, regarding telegraphers of every class, a feature of each issue. Every effort will be made to make this department bright and attractive, and to facilitate my work in that direction I ask telegraphers every-



F. M. MCCLINTIC

where, whether actively connected with the work or with outside interests, to address me, in care of this paper, any communication which may be of interest to telegraphers or those identified with electrical pursuits throughout the world.

What is the best telegraph story that you can tell? What is the funniest thing that you can relate in connection with your own experience as a telegrapher, or that of any of your friends? Tell it to me in your own way, and in that manner permit the whole fraternity to enjoy it.

If you answer an advertisement in the AGE, please mention the fact to the advertiser when you write so that he will know that he is getting a return from this particular paper. All the world loves a hustler and we desire that our advertisers and subscribers shall know that we are giving them full value and a measure besides.

Those desiring to send their subscriptions or orders directly to me in care of this paper, are assured that they will receive prompt attention.

F. M. MCCLINTIC.

An unusual number of new partnerships among New York Stock Exchange firms was announced on January 1, together with a number of changes in branch offices.

E. F. Hutton & Co., 61 Broadway, have established a branch office in the Hotel Plaza, with Jos. L. Roberts as operator. The same firm has opened

an office at Oakland, Cal., with W. R. Ansley as manager, and J. J. Vis, operator, and an office at Coronado, Cal., with Stephens & Co., W. S. Carpenter being manager and F. M. Koehler operator.

Warren W. Irwin & Co. have opened a branch office at Hagerstown, Pa.

Edward B. Smith & Co., 30 Pine street, have opened a branch office at Easton, Pa., using a private telephone wire.

N. L. Carpenter & Co., 21 William street, have opened a branch office in Augusta, Ga., with W. S. Hammond as operator.

Harvey Fisk & Sons, 62 Cedar street, have opened an office at 15 East Forty-fifth street, New York, using private telephone connection.

McClave & Co., have established an office in the Hotel Ansonia, New York.

Megargel & Co., of 35 Pine street, have established an office in Chicago.

F. P. Ristine & Co., have opened an office at 17 Broad street, New York.

The telegraph staff of Harris, Winthrop & Co., 15 Wall street, in charge of Hazard Conkling, now consists of an all-star aggregation of ten men, among whom are Charles Correll, assistant to Mr. Conkling, James D. Hinnant, who is rated as one of Wall street's speediest and most accurate operators; J. W. MacLaren, formerly and for many years of the New York Associated Press force; Frank Cameron and J. B. McKeever. One of the members of the firm is Charles G. Smith, a former well-known telegrapher.

Former Telegraphers Who Have Made Good.

HON. LEE MANTLE, OF MONTANA.

The life of Hon. Lee Mantle, of Montana, who landed in New York in 1864, at the age of ten years, a penniless boy with a widowed mother and six brothers and sisters and became United States Senator from Montana in 1895, should be an inspiration to any boy or young man. Senator Mantle attributes a goodly part of his success to his education and experience as a telegrapher, in the pioneer days of the west.

Senator Mantle's record is a part of the history of Montana, and the senator, being modest, avers that it is too fulsome, but men who have known him through a long career of honorable activity, say that it barely does him justice.

Lee Mantle's mother and her little brood of children set out from New York early in 1864 and, with Salt Lake City as a destination, crossed the plains from Missouri with ox teams, walking most of the way—a journey of over fourteen weeks—with the latter part of the journey through snow up to the axles of the wagons, and through a hostile Indian country, in a year of uprisings. That trip inured the boy for the real struggle to come. For several years he worked for his board and clothes on neighboring ranches, herding sheep and cattle; logging in the mountains, etc. There was little opportunity for schooling. He spent five years as telegraph operator and stage agent at the

old Pleasant Valley Home State Station, on the apex of the Rocky Mountain range, near the Montana-Idaho line. He was his own line repairer, but managed to read and study, gradually fitting himself for greater things. In the senator's own words: "My first real advancement was when I learned telegraphy, and later secured a position as line repairer at a salary of \$100 per month, which then seemed almost fabulous." He was shortly afterwards given an office on the overland line, running from Corinne, Utah, to Helena, Mont., which he held for six years, also doing his own line repairing. This latter work kept him in the saddle fully one-half of his time, through a region scarcely touched by civilization, but now fruitful and prosperous. Senator Mantle saw the west grow from a wilderness to an empire, from social chaos to an advanced civilization, and his was no small part of the grand evolution. In 1895 the people of Montana elected him to the United States Senate, as an earnest of their appreciation for his part in the up-building of their affairs. His record in the Senate was noteworthy, and his retirement through the disruption of the Republican party over the silver question caused deep regret among those who had learned his worth.

Senator Mantle's devotion to his mother was exceptionally strong. For the last twenty-five years of her life she was a member of his immediate family, living in peace and comfort, after long years of hardship such as few women are subjected to in the present day. His own tribute to his mother is: "Whatever of success I may have met in life I attribute mainly to her teachings and example, and it was always my earnest desire to hold her respect and admiration, as well as her love."

It is now nearly forty years since Senator Mantle has touched a key, but he says: "I look back with many pleasant and grateful memories to the days when I worked the old 'register' and read the dots and dashes from the strip of paper, before I had learned to read by sound."

OBITUARY.

FRED. KEANE, aged fifty-five years, a broker operator, and formerly of the Western Union service, died in Cedar Rapids, Iowa, November 30, last.

HARRY W. STEARNS, aged forty-one years, a son of the late J. B. Stearns, inventor of the Stearns duplex system of telegraphy, died at Rockport, Me., December 5. Mr. Stearns was an expert electrician. He is survived by a brother, Edward S. Stearns, of Thomaston, Me., as well as his wife and two children.

MRS. J. H. BUNNELL, aged sixty-four years, wife of the late Jesse H. Bunnell, founder of the J. H. Bunnell and Company, telegraph instrument manufacturers, New York, died at her home in Brooklyn January 8. She is survived by two daughters. Mrs. Bunnell was well-known to the telegraph people and had attended many of the old-time telegraphers reunions. She was a native of Philadelphia, Pa.

HENRY H. HALL, aged eighty years, an old-time

operator, and superintendent of the Ashtabula Children's Home, Ashtabula, Ohio, died in that place January 9, of pneumonia. Mr. Hall was an operator for more than fifty years. He transmitted from Cincinnati, Ohio, the first message announcing the nomination of James Buchanan for the presidency. Mr. Hall was manager of the Pittsburgh Western Union office at one time. He was well-known among charitable workers throughout the State of Ohio.

Questions to be Answered.

[The following questions are based upon the contents of Jones' "Pocket Edition of Diagrams and Complete Information for Telegraph Engineers and Students," and have been prepared for the study of this book. The asking of questions to be answered by the student is an excellent method of acquiring information, besides cultivating the habit of concentration of thought which is so essential in the study of any subject. Every telegrapher who is desirous of learning the technical side of telegraphy should follow this method of instruction diligently. He will be surprised to note from time to time how his knowledge is increasing, and this almost without effort on his part. This book is sold by TELEGRAPH AND TELEPHONE AGE at \$2.00 per copy.]

What is the condenser-locking grounded half repeater? (page 230)

Under what conditions is it necessary to insert 1,800 ohms resistance in a circuit, and for what purpose?

Study the diagrams of the locking half repeater on pages 230 and 231.

What is the purpose of the one-quarter-microfarad condenser used in connection with the apparatus, and what is the four microfarad condenser employed for? (page 232)

When does the condenser become short circuited?

What is the function of a three-wire repeater?

Is any form of repeater adaptable to use as a three-wire repeater?

Can a three-wire repeater be used in connection with duplex and other multiple systems?

When three wires are to be worked together, how many sets of repeaters are ordinarily used?

Is such an arrangement convenient?

What is the advantage of a three-wire repeater in the matter of relays?

Study the illustration of a three-wire repeater on page 233 in connection with the description of the operation of the device, on pages 232, 234 and 236.

Study the Postal Company's three-way repeater described and illustrated on pages 236 and 241.

How many pole-changers are there in the complete Postal unit? (page 236)

How are the armature and closed contact point of the branch office transmitter connected to the main line?

Is there any difference between the Wheatstone automatic duplex and the ordinary polarized duplex?

What apparatus is employed for the Wheatstone duplex?

How are the signals of the Wheatstone system recorded? (page 243)

What is the feature of the Wheatstone method?

INDUSTRIAL

Western Electric Year Book.

The second edition of the "Electrical Supply Year Book for 1916" has been issued by the Western Electric Company. It continues the practice of a simple series of list prices upon which a basic discount applies, such a discount indicating to the holder of the catalogue his approximate price for all the articles listed.

The book has a stiff light blue artistically designed cover and differs from the 1915 issue only in that its listings are more complete and comprehensive, the number of pages being 1504 as compared with 1296 last year.

One of the features of the present book is a section in which are listed all the sales helps that the company furnishes its agents gratuitously. Herein are illustrated all these helps in reduced size, together with reference numbers by which any or all may be ordered. Electrotypes, window displays, booklets and lantern slides are among the helps listed. The new catalogue deserves a place on every electrical supply man's shelf, much the same as a dictionary finds a place on the writer's table.

THE TELEGRAPH AND TELEPHONE LIFE INSURANCE ASSOCIATION has inaugurated a vigorous campaign for new business, and it is likely that a wide interest will be awakened as to the benefits of membership in the association. Telegraph and telephone employees should give the matter of life insurance their serious consideration. This association is the oldest of its kind and the most substantial. It is purely fraternal, and every employe who is eligible should become a member. He not only thus benefits himself and family, but helps many others as well, and this is one of the first duties of every man. The advertisement of this association, which appears on another page, embraces a coupon which, when filled out and sent to the secretary, Mr. M. J. O'Leary, 195 Broadway, New York, will bring some interesting information.

THE INTERNATIONAL TRANSMITTER COMPANY, 84 Johnson street, Brooklyn, N. Y., is placing on the market a keyboard transmitter for use on telegraph lines, as well as for wireless telegraph service. In two minutes, the transmitter can be changed so as to send the Continental or the American Morse code as desired. This is a very acceptable feature, and it will appeal strongly to every telegraph man who wishes a transmitter that will send perfect American Morse or Continental code, without the use of the nerve-racking key. The advertisement shows an illustration of the keyboard transmitter. Those who are interested in this device will do well to write for a descriptive catalogue, which will be furnished on application.

MR. EDISON'S QUICK WORK.—A building of Mr. Thomas A. Edison's chemical plant at Silver Lake, N. J., was destroyed by fire January 9. Mr. Edison said he would have a new building erected in forty-eight hours. Before he went to bed he had the plans all drawn.

HOLIDAY GREETINGS.—In addition to the holiday greetings acknowledged in our previous issue, we have received others, from John J. Ghegan, president, J. H. Bunnell & Co., New York; Clarence R. George, secretary, International Association of Municipal Electricians, Houston, Tex.; D. Van Nostrand Company, New York; Ben. C. Wilkins, Western Union Telegraph Company, Ashland, Wis.; H. P. Trainor, electrical engineer telegraphs and telephones, Bloemfontein, South Africa.

LETTERS FROM OUR AGENTS.

NEW YORK WESTERN UNION.

Misses Ekstrand and Park, in charge of the telephone bureau in this office, deserve much credit for the great assistance rendered by that department to the telegraph service during the shortage of wires resulting from the recent blizzard. The telephone bureau handled a very large local business for the telegraph, and was of material assistance in disposing of long-distance business. The telephone operators displayed commendable energy and good will.

The Western Union Educational Society will give a minstrel show at its next entertainment.

Copies of "Lincoln in the Telegraph Office," and "The Telegrapher in Battle," well-known telegraph books, have been presented to the Western Union Educational Society by the authors, Messrs. David Homer Bates, New York, and Dr. J. E. O'Brien, Scranton, Pa.

Mrs. C. A. Meyers, wife of Mr. Conrad A. Meyers of this office, died December 18, and sympathy is expressed for Mr. Meyers by his office associates.

Mr. H. Ratner, assistant chief operator at Pittsburgh, Pa., was a recent visitor at this office, where he spent some time familiarizing himself with new methods of handling business.

Mr. Samuel L. Nash, a wire chief in this office, has been retired on a pension.

Mr. James J. Riley, manager of the 323 Greenwich street office, distinguished himself as a tambourine man in the performance given by the "Nyme" minstrels, at the Mercantile Exchange, December 29. The minstrels are made up of members and employees of the Mercantile Exchange. Mr. Riley did a lot of effective work to make the performance a success. Mr. Riley made an excellent showing for himself and the company he represents.

W. R. Klitz, operator, was married to Miss Pauline Baker, of the automatic department, January 5.

D. Saperstein, operator, was married to Miss Esther Borshotsky, a clerk in the operating department, New Year's Eve.

C. S. Foster, an old-time operator in this office, died December 17.

W. H. Gavigan, an old-time telegrapher, formerly an employe of this company at 195 Broadway, died January 6.

James C. William, prominently identified with annual receptions of the New York Telegraphers' Aid Society, died December 28, at Brooklyn. His remains were buried in Meriden, Conn.

Elijah Taylor was ran over by a street car and killed, January 5. He was on the pension list.

About fifty employes of the general operating department begun the New Year by availing themselves of the new vacation plan with pay.

The old style short line printers have been discarded. The Western Union new style short line printers are being installed and it is expected they will all be in operation by the end of the month. The first one is now in operation between this office and the Western Electric Company's building. The other two printers will be operated between this office and the 26 West 31st Street office. Mr. E. Kameny is in charge.

January 4 and 5 were moving days for the trunk wires. All trunk wires are now on the fourteenth floor, reserving the entire fifteenth floor for multiplex sets.

PHILADELPHIA POSTAL.

Among recent visitors were H. Marks, southern traffic chief, M. Auerbach and M. A. Auerbach, all from New York.

The sympathy of the force was extended to Miss Elizabeth Farrell, whose sister died recently.

The eulogy of Mr. R. B. Zeigler, by Mr. O. C. Balmer, on the bulletin board, is very timely. Mr. Ziegler is dangerously ill. We trust there will be more by others which will tend to create good fellowship.

CHICAGO WESTERN UNION.

Mr. G. E. Palmer, chief operator of the New York office, and Mr. H. Ratner, assistant chief operator at Pittsburgh, Pa., were recent visitors here.

Mrs. Harriet Schmalz (formerly Miss Pretzel) an ex-printer employe, died suddenly, December 27.

Frank W. Alton, well known as one of the oldest night service clerks, died January 4.

George Kent, a well-known broker operator, died recently.

John S. Henderson, aged seventy-eight years, an old-time operator, died in Chicago, January 1. Mr. Henderson was a gentleman of the old school and stood high in the estimation of his friends. He was born in Quebec, Canada, July 8, 1838, and entered the telegraph service in 1852 as a messenger. He soon became an operator, and during

Rubber Telegraph Key Knobs.

No operator who has had to use a hard key knob continuously should fail to possess one of these flexible rubber key caps, which fits snugly over the hard rubber key knob, forming an air cushion. They render the touch smooth and the manipulation of the key much easier. Price, fifteen cents. J. B. Taltavall, TELEGRAPH AND TELEPHONE AGE, 253 Broadway, New York.

his career served as operator and manager at various places for the Western Union and Postal Telegraph-Cable Companies. Between 1860 and 1875 he was division superintendent at Ogdensburg, N. Y., for the Western Union and Montreal Telegraph Companies. The last position he held was that of special agent for the Western Union Company in Chicago.

DALLAS, TEX., WESTERN UNION.

Mr. J. B. Dillon, test-board attendant at Dallas, has been appointed wire chief at Little Rock, Ark., and Mr. H. L. Browne, former wire chief at Little Rock, has been appointed wire chief at Dallas.

OKLAHOMA CITY WESTERN UNION.

Assistant manager L. Eppstein has accepted a similar position at Salt Lake, Utah.

Mr. Ed. V. Rogers has returned to work after a brief illness.

Mr. R. D. McRay, with the Associated Press here, has been transferred to Beaumont, Tex. Mr. M. C. Harper relieves him at the *Daily Oklahoman*. This change is due to the *Evening Times* of this city discontinuing the Associated Press day service.

Mr. C. M. Van Clarke, of the American Telephone and Telegraph Company, has been transferred to Boise, Idaho, as chief test-board operator.

Night chief operator R. N. Long, after two weeks leave, during which he visited Little Rock, Memphis, New Orleans and other southern cities, returned in time for Christmas and is again at his post.

Col. F. J. Chopp is relieving manager Hurlbut, of Guthrie, Okla., who is suffering from an attack of la grippe.

Mr. W. E. Welch, superintendent of the Fort Smith and Western Railway at Fort Smith, Ark., and Mr. C. V. Depew, engineer of equipment, Dallas, Tex., were recent visitors.

Division wire chief Ira D. Hough, of Dallas, Tex., also made us a pleasant business call.

30TH ANNIVERSARY

Serial Building Loan and Savings Institution

President, . . . Ashton G. Saylor
Secretary, . . . Edwin F. Howell

Resources	-	-	-	\$900,000
Surplus	-	-	-	35,000

The Serial was established in 1885 by telegraphers and has faithfully served their interests as a

Savings Institution and Home Building Association.

You should have a savings account, but never will unless you begin NOW.

Western Union Building, 16 Day Street, 9 a.m. to 5 p.m.
Postal Building, 253 Broadway, Room 1030, 2.30 to 4.30 p.m.,
every Friday, 15th and last day of month.
Telephone Building, 24 Walker Street, Room 1129, Daily
9 a.m. to 2 p.m.

Close at 1 p.m. Saturdays

Classified and Want Advertising Section

Advertisements will be accepted, for this department of the paper, at the rate of five cents per word.

MORKRUM COMPANY TELEGRAPH PRINTERS

717 Railway Exchange, Chicago

THE AMERICAN TELEGRAPHER. A monthly magazine of railroad and telegraph tales. Jeff W. Hayes, editor. Price, \$1.00 per year. Address, American Telegrapher, 1822 East Morrison street, Portland, Ore.

Our Subscription Department

This publication is prepared to handle subscriptions for any paper or magazine published. Our friends can hereafter look upon TELEGRAPH AND

TELEPHONE AGE as a clearing-house for all journals no matter where printed. Address and make remittances to TELEGRAPH AND TELEPHONE AGE, 253 Broadway, New York. Among the publications devoted to electricity which we make a specialty of are the following:

THE WIRELESS AGE, monthly, New York, price \$1.50 per year in U. S., \$2.00 to all other countries.

TELEPHONY, weekly, Chicago, price \$3.00 per year in U. S., Canada \$4.00, and all other countries \$5.00.

ELECTRICAL WORLD, weekly, New York, price \$3.00 per year in U. S., Canada \$4.50, all other countries \$6.00.

THE TELEGRAPH AND TELEPHONE JOURNAL, monthly, London, \$1.25 per year.

ELECTRICAL REVIEW, weekly, London, \$7.50 per year.

ELECTRICAL REVIEW, weekly, New York and Chicago, price \$3.00 per year in U. S., Canada \$4.50, all other countries \$6.00.

ENGRAVINGS FOR SALE.—Photogravure pictures, suitable for framing of Dr. Alexander Graham Bell, inventor of the telephone; Theo. N. Vail, president, American Telephone and Telegraph Company, and Edward J. Nally, vice-president and general manager, Marconi Wireless Telegraph Company of America. Half-tone engraving of Edward Reynolds, vice-president and general manager, Postal Telegraph-Cable Company. Size, 8 x 11. Price 25c. each. Address and send remittances to TELEGRAPH AND TELEPHONE AGE, 253 Broadway, New York.

FOR SALE—Snapper Sounders. Make a loud noise, the "click" being similar to telegraph sounders. Price, 25 cents each. Remit in postage stamps. Address, SNAPPER SOUNDER, care TELEGRAPH AND TELEPHONE AGE, 253 Broadway, New York.

TO ALL TELEGRAPHERS.—I have one of the largest wholesale and retail tobacco stores in New Hampshire. I have put on the market for the benefit of smokers a small cigar called the "Havana Bouquet"—a small cigar for a short smoke—and it will turn you away from wanting to smoke cigarettes. They are packed one hundred in a neat box. A box costs you only one dollar, that is only one cent each cigar. Send me one dollar and I will send you the cigars, postpaid. TOM C. LECKEY, Wholesale and Retail Tobaccoist and Manager, Postal Telegraph-Cable Co., Portsmouth, N. H.

Marshall's Electrical Condensers

FOR TELEGRAPH, TELEPHONE, ELECTRIC LIGHT, X-RAY, EXPERIMENTAL AND WIRELESS SYSTEMS.

Sending Condensers for Wireless made to stand any voltage required. Standard Condensers a specialty. These Condensers are used in all Telegraph offices in America where Standard and ordinary Condensers are required. CONDENSERS AND ARTIFICIAL LINES for Submarine Cables and Land Lines. Send for Catalogue.

References: O. STRUBEL, Esq., Engineer Mex. Tel. Co., N. Y.
J. G. MURRAY, Esq., Electrician C. & S. A. Tel. Co., N. Y.

Address: WM. MARSHALL, 709 Lexington Ave., near 57th St., New York.

DISC TELEGRAPH RECORDS.—Diamond medal telegraph records are interesting and instructive. These are double Morse telegraph records; that is, they have records on each side of the disc, and can be used on any make of talking machine. There are eight discs in the set, sixteen lessons in all, and the lessons lead the student on by easy stages. The specimens of Morse sending are beautiful.

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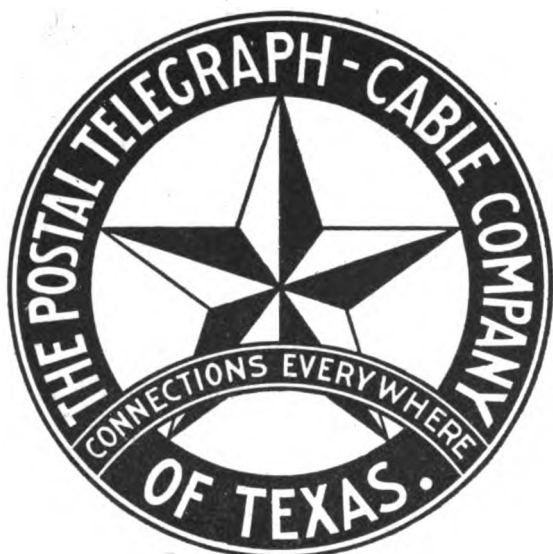
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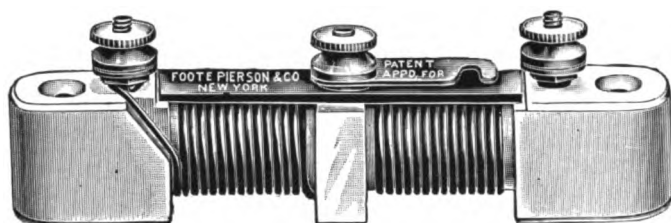
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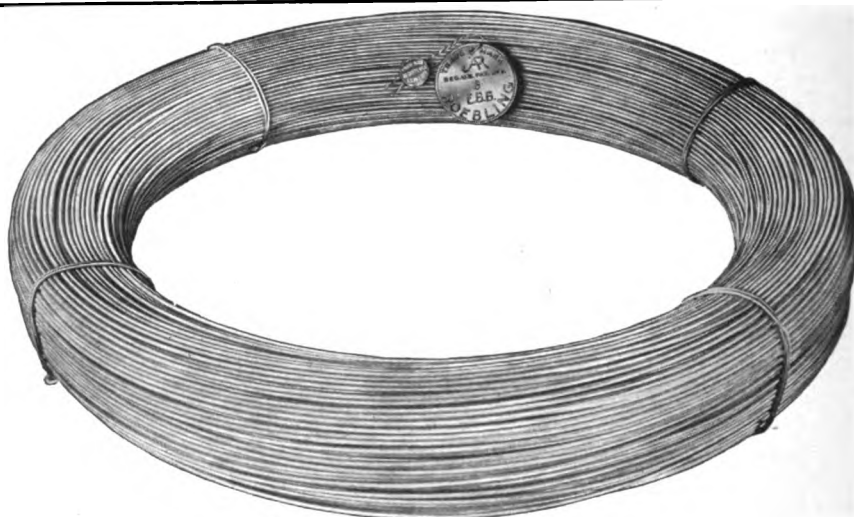
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No. 6

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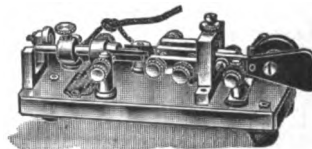
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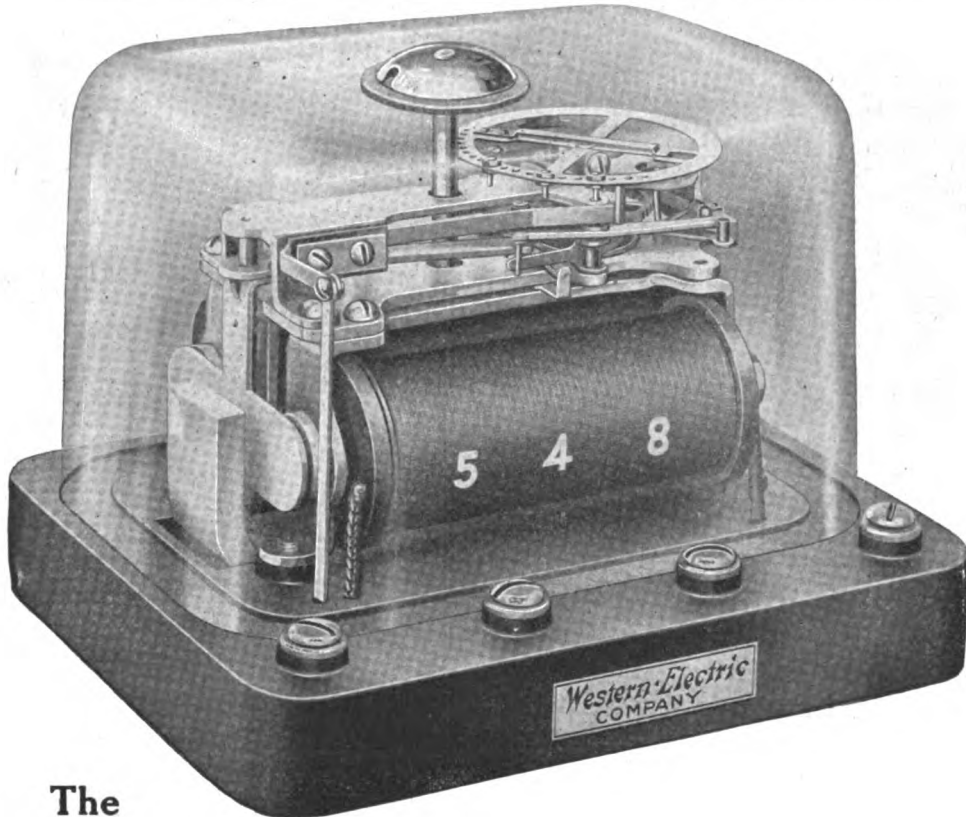
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Telegraph and Telephone Age

No. 9.

NEW YORK, MAY 1, 1916.

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Telegraph and Telephone Age

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NEW YORK, MAY 1, 1916

CONTENTS.

Supervising Sending. Country Life for Employees. Telegraph, Telephone and Cable Companies to File Monthly Statements. Contributions Desired.....	197
War Operators. History of Printer Systems. Telegraph and Telephone Patents. Stock Quotations.....	198
Personal. Postal Executive Office Notes.....	199
Western Union Executive Office Notes. Retirement of Mr. A. R. Brewer.....	200
Dinner of Morse Club. The Cable. Canadian Notes.....	201
The Telephone. Radio Telegraphy.....	202
An Interesting New Book for Telegraphers. Questions to be Answered.....	203
Efficiency Engineering in the Telegraph Service (Continued).....	204
Ohm's Law, By J. B. Dillon. The "Erie" Short Cut, By C. R. Langley. Opportunities in Messenger Service.....	205
Early American Telegraph Companies. Telegraph Oddities.....	206
The Tying and Splicing of Copper Wire as Affecting the Quality of Service, By W. H. Collins.....	207
Early Western Telegraph History.....	208
Printer Systems, By H. A. Emmons.....	209
The Telegraph Beat the Horses. A Lesson in Government Ownership of Telegraphs.....	210
The Old Timer and Old "195," By Willis H. Jones.....	211
Locating a Ground by Voltmeter. Success Is Not a Secret.....	212
The Railroad. Municipal Electricians. Obituary.....	215
A. G. Tebbs, Contestant at San Francisco Telegraph Tournament. Echoes of the Tournament. New Book—Elementary Lessons in Electricity and Magnetism.....	216
Answers to Questions. Business Opportunities.....	217
Old Timers and Military Telegraphers. How to Buy Telegraph and Telephone Stocks. Of Interest to Operators. Letters from Our Agents.....	218

Supervising Sending.

"If we could 'hear' ourselves as others 'hear' us"—to paraphrase a well-known quotation—few operators would recognize their own sending when coming from a source outside of themselves.

One of the latest developments in the line of efficiency is the supervising of the work of operators by means of a dictaphone record. The work is recorded on the wax cylinder and preserved as a sample for analysis and examination. This, however, is not done as a punishment but rather to

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This purifying process will tend to improve the performance of individuals and increase their rating, and in the long run will be very beneficial both to the individual and the service.

Country Life for Employees.

At this time of the year, when everything in nature is reviving after the long winter's blasts, the thoughts of many city telegraph employes are turned toward the country where pure air abounds and where there is room to turn around and enjoy freedom. It would be well for such persons to get busy, with the idea of getting into the country to live, especially those who have families. Many of them can do it, if they make up their minds to do so. If the house problem seems an unsurmountable one to them there is an easy way out of that, for the building and loan association which is conducted in the interest of and by telegraph employes will take care of that for any worthy employee. Many operators now living in the country derive considerable extra income from raising chickens, squabs, strawberries, etc., for which there is always a demand, and the egg product is an important source of income.

There is much satisfaction and pleasure in such a manner of living, and when an operator goes to his desk in the morning his whole being is saturated with health and buoyancy. This is the way to live to get the most enjoyment and happiness out of life, in fact it is promotive of good health.

Telegraph, Telephone and Cable Companies to File Monthly Statements.

The Interstate Commerce Commission, on April 10, ordered that each and every telegraph and cable company subject to the provisions of the act to regulate commerce shall, beginning as of January 1, 1916, make and file, in duplicate, with the commission monthly reports of revenues and expenses, within forty days after the close of the calendar months severally covered by the reports made.

A similar order was made with reference to telephone companies having annual operating revenues above \$50,000.

Contributions Desired.

In the conduct of a class publication, such as this journal is, it is always the endeavor of the managers to make it as interesting as possible to the greatest number of its readers. Among these are presidents, general officials, technical staff, superintendents, managers, chief operators, operators, clerks and messengers of telegraph, telephone, cable, railroad, wireless and other companies of similar

character. To serve all of these with news of special interest is not an easy task without outside help. What we need to fill out our plan for making this paper more satisfactory to the greatest number is items of news from the different sections of the country, and we extend a general invitation to those of our readers who care to do so to contribute toward this desirable result.

This is really a "family" paper and we want every member of each branch of the family to feel that it is his or her paper, because we are conducting it primarily for their benefit, and we want to supply news of interest to every individual in each issue. Will you help?

War Operators.

We are frequently asked by American operators who understand continental code if there would be an opportunity for them to obtain positions in England or on the continent on the present staff of operators in the various countries while the demands on account of war conditions are great. To satisfy those who desired the information we wrote to the postmaster-general of England in regard to the matter and he replies that the number of qualified telegraph operators at present available in that country is considered to be sufficient to meet the requirements of the Post Office during the war, without the need for engaging telegraphers from other countries.

History of Printer Systems.

It is a well known fact that everything in this world had an origin and that nothing ever came into being in a perfect state spontaneously. In other words everything has a history, and were it not for the history of things we learn about, our knowledge concerning them would be dry and uninteresting.

Hundreds of telegraph employes are at this time deeply interested in printer systems but relatively few know anything of the history of these developments. Mr. H. A. Emmons told the story of the early life of printer systems before the Western Union Educational Society in New York and his address was printed subsequently in the society's transactions. We publish elsewhere in this issue the part of the address pertaining to the history of printers which everyone interested should be familiar with.

THE PAN AMERICAN CONGRESS which has been in session at Buenos Aires, Argentine, has adopted a resolution favoring the prolongation of the union with telegraph companies of northern countries, reduction of the tolls, and advocating government ownership of radio stations.

Telegraph and Telephone Patents.

ISSUED MARCH 28.

- 1,176,925. Apparatus for Radio Communication. To G. W. Pickard, Amesbury, Mass.
 1,177,271. Telegraph System. To P. M. Rainey, Glen Ridge, N. J.
 1,177,445. Telephone. To H. Thompson, Raillieboro, South Monaghan, Ontario, Canada.

1,177,485. Telephone Signal. To De Forrest Champion, Houlton, Me.

ISSUED APRIL 4.

- 1,177,617. Sound Muffler Attachment for Telephonic Apparatus. To L. B. Gray, Boston, Mass.
 1,177,694. Telegraphic Type Printing Receiver. To A. Franke and E. Ehrhardt, Grunewald and Pankow, Germany.
 1,177,708. Wireless Safety Ship Signal. To P. Juhasz, South Bend, Ind.
 1,177,754. Printing Telegraph Apparatus. To W. Zabel, Edgewood Borough, Pa.
 1,177,776. Telephone System. To C. F. Jones, Oakland, Cal.
 1,177,778. Telegraph Sending Machine. To J. M. Kennedy, St. Louis, Mo.
 1,177,782. Printing Telegraph Apparatus. To L. V. Lewis, Edgewood Borough, Pa.
 1,177,789. Trunking Arrangement for Automatic Telephone Exchanges. To T. G. Martin, Chicago, Ill.
 1,178,021. Telephone. To R. H. Manson, Elyria, Ohio.
 1,178,023. Telephone Key. To E. G. Mueller, La Grange, Ill.
 1,178,215. Printing Telegraph Receiver. To G. S. Conger, New York.
 1,178,291. Telegraph Key. To R. L. Boulter, Los Angeles, Cal.
 1,178,471. Automatic Telephone Exchange Apparatus. To G. E. Kimball, Chicago, Ill.
 1,178,472. Telephone Transmission System. To A. B. Smith, Evanston, Ill.

ISSUED APRIL 11.

- 1,178,507. Wireless Signaling. To R. A. Fessenden, Washington, D. C.
 1,178,511. Protector for Telephones, etc. To J. E. Fullmer and E. L. Bullis, Kilbourn, Wis.
 1,178,878. Telegraphy and Telephony by Submarine Cables, Long Distance Overhead Lines, and the Like. To J. Schiessler, Baden, near Vienna, Austria-Hungary.
 1,178,879. Electromagnetic Typewriter. To J. Schnyder, Kriens, near Lucerne, Switzerland.
 1,178,882. Electrical Receiving Apparatus. To T. N. Slocum, Aberdeen, Wash.
 1,178,890. Radiotelegraphy Station. To Graf George von Arco, August Leib and August Frey, Nonnendamm, near Berlin, Germany.
 1,179,117. Telephone. To E. D. Lowry, Philadelphia, Pa.
 1,179,175. Telephone System. To E. A. Graham, Brockley, London, England.
 1,179,353. Wireless Telegraphy. To L. F. Fuller, Palo Alto, Cal.

Stock Quotations.

Following are the New York closing quotations of telegraph and telephone stocks on April 26:

American Telephone and Telegraph Co.	127½
Mackay Companies	76¾—83
Mackay Companies, preferred	66¾—68½
Marconi Wireless Tel. Co. of Am. (Par value, \$5.00)	3½
Western Union	89¾

PERSONAL.

MR. FREDERICK PEARCE, a well-known electrical manufacturer of New York, has returned from a pleasure trip through Florida and Cuba.

MR. JEFF W. HAYES, editor of *The American Telegrapher*, is in New York in the interest of his new book, "Autographs and Memoirs of the Telegraph."

MR. JOHN E. WRIGHT, inventor of the Wright printing telegraph system, an old-time telegrapher, Pittsburgh, Pa., is a business visitor in New York where he will remain several weeks.

MR. P. J. BARRETT, a railroad telegraph operator, of Youngstown, Ohio, has devised and is having patented a very clever device for the opening and closing of automobile doors which is operated by means of a foot lever.

MR. CHARLES R. UNDERHILL, chief electrical engineer, The Acme Wire Company, New Haven, Conn., lectured on the subject of electromagnets at Leland Stanford University, Palo Alto, Cal., April 17, and at the University of California, Berkeley, Cal., April 18.

MR. CARROLL E. SCOTT, Farmington, N. H., a telegraph operator, has made his work at the key pay his expenses through a preparatory school lasting four years and a three-year term in college. Education obtained in this way is lasting and Mr. Scott will undoubtedly make an impression in the business world.

MR. JAMES N. WORL, a justice of the peace, of Westfield, N. J., and a forty-niner of the telegraph, celebrated his eighty-third birthday on April 15. Mr. Worl entered the telegraph service in Philadelphia in 1848 on the Magnetic Telegraph Company's lines and was actively engaged in various capacities, being general manager of one of the companies during the civil war. He retired from the telegraph service about twenty-five years ago.

MESSRS. J. J. GHEGAN, Lee Lemon and J. B. Taltavall recently visited Mr. Patrick B. Delany at South Orange, N. J., where they witnessed a demonstration of a new talking machine reproducer and tone arm, the invention of Mr. Delany, which produce wonderfully natural effects. Mr. Delany's investigations in this field have been carried on for several years and a number of patents are about to be issued covering his improvements which are quite radical. Mr. Delany is a well-known electrical engineer, an old-time telegrapher and an inventor of international reputation.

LIEUTENANT-COLONEL GEORGE O. SQUIER, military attache of the American Embassy at London, England, has been appointed to head the United States Army aviation school at San Diego, Cal. Lieut.-Col. Squier has had a notable career in the signal service of the United States Army. He commanded the cable-ship "Burnside" during the laying of the Philippine cable system and did research work at Johns Hopkins University in multiplex telephony, the sine-wave system of telegraphy and ocean cabling. On account of his original work in telegraphy and telephony Col. Squier is well known in these circles.

POSTAL TELEGRAPH-CABLE CO.**EXECUTIVE OFFICES.**

MR. W. I. CAPEN, vice-president, will leave during the first week of May on a business trip to Albuquerque, N. M., and El Paso, Tex., stopping at the more important places on the way.

MR. E. W. COLLINS, general superintendent at Chicago, has just returned to his office from a trip of inspection with Superintendent A. B. Richards, of Kansas City, Mo., to Oklahoma City and Muskogee, Okla.; Hutchinson, Wichita, and Coffeyville, Kan., and Independence and Kansas City, Mo.

REDISTRICTING WESTERN TERRITORY.—The lines and offices in the states of Iowa, Nebraska and South Dakota, heretofore under the charge of Superintendent A. B. Richards of Kansas City, Mo., will be placed under the supervision of Mr. C. A. Comstock, superintendent, with headquarters at Chicago, Ill. This change is made to relieve Superintendent Richards, who had too much ground to cover, and to take proper care of the increase in business in his territory.

MR. W. J. DEEGAN, who holds a responsible position with the Mackay Companies, was married to Miss A. E. Foster in New York, April 24.

MR. HARRY J. O'DONNELL, manager at Springfield, Ill., has resigned to enter the insurance business.

MR. FERRIL DAVIS, of the Colorado Springs, Col., office of this company, has been appointed manager at Rocky Ford, Col., vice Miss M. E. Meyers, deceased.

MR. THOMAS P. DOWD, manager, Pittsfield, Mass., and H. B. Thornton, chief operator, Atlanta, Ga., were recent executive office visitors.

MANAGERS APPOINTED.—C. Sellars, at Sedalia, Mo.; H. E. Narmen, Atchison, Kan.

CHARLES H. SEYMOUR, aged forty-three years, chief clerk of the tariff department of this company for over twenty years, died at his home in East Orange, N. J., April 17. He entered the service of the company in June, 1890, and was a faithful employe. The funeral on Wednesday evening April 19, was attended by a large number of office associates and friends. He is survived by his wife and one son.

MISS MARY E. MEYERS, manager of the Rocky Ford, Col., office of this company, died suddenly of apoplexy April 8. She was manager of the office for seventeen years. She was active in charitable work and did much for the betterment of the community. During her service as manager there was never a claim or complaint against the Rocky Ford office, and she never requested the company to cancel a worthless account; her conduct of the office and its business were faultless. The company has lost a capable, faithful, and honest employe, and the citizens of the place testified to their admiration of the character of the deceased by closing their banks and stores during the funeral. She was loved by all classes in Rocky Ford, and her funeral was attended by the best and most influential people of the city as well as by the poor.

A FLOOD OF NIGHT LETTERS.—Sixty-two thousand night letters of a political character were filed in the Postal main office in Boston by C. S. Bird, April 23, to be delivered to the voters in Boston and suburbs within forty-eight hours. The task was handled with promptness and the messengers were kept busy. The tolls on these messages amounted to \$16,000.

NEW WASHINGTON OFFICE.—This company moved into its new quarters at Washington, D. C., April 16. The new offices are in the Evans Building, on New York Avenue near Fifteenth Street, and occupy practically the entire sixth floor as the operating and bookkeeping departments, while the business office, manager's quarters, and messenger department are located on the ground floor, with a large portion of the basement utilized by the construction department, lockers and showers for messengers and storage rooms for supplies and materials. The offices are handsomely fitted up and the equipment is modern throughout.

MAGNETIC CLUB DINNER.—The spring dinner of the Magnetic Club will be held at the Hotel McAlpin, New York, May 4. Mr. Clarence H. Mackay has promised to be present and will make a few remarks, and it is expected that Mr. G. H. Usher, general superintendent, Atlanta Ga., and other prominent officials of the Postal Company will also be in attendance. The greater portion of the evening will be devoted to entertainment by professionals. All acceptances should be in the hands of Mr. Joseph J. Cardona, treasurer, 253 Broadway, New York, not later than Tuesday, May 2. Mr. Edward Reynolds is president and Mr. W. B. Dunn secretary.

WESTERN UNION TELEGRAPH CO. EXECUTIVE OFFICES.

Retirement of Mr. Brewer.

Mr. A. R. Brewer, one of the foremost and best-known telegraph men in the United States, retires from the Western Union service May 1, at his own request.

On the evening of April 25 he was tendered a testimonial dinner by the treasurer and his entire office staff, at "Stewart's," Park Place, New York, and presented with a silver loving cup. Mr. Lewis Dresdner, treasurer of the company, presided and short and appropriate addresses were made. There were twenty-three persons in attendance, including four ladies employed in the treasurer's office. Mr. Brewer will be sixty-nine years of age on May 3.

Mr. A. G. SAYLOR, general manager, and Mr. W. A. Sawyer, district commercial superintendent, New York, have returned from a business trip through the eastern Pennsylvania section of Mr. Sawyer's district.

Mr. W. L. JACOBY, president, American District Telegraph Company, New York, has returned from a business trip through the middle west, Texas and the Pacific Coast.

Mr. C. J. POLLAK, general superintendent, American District Telegraph Company, New York, is on an inspection trip through Ohio and Michigan.

Mr. G. L. Ross, district superintendent, National District Telegraph Company, Buffalo, N. Y., has resigned and is succeeded by Mr. H. A. Mannshardt, formerly manager of the American District Telegraph Company, at Pittsburgh, Pa. Mr. Alfred Van Valen has been appointed manager at Pittsburgh to succeed Mr. Mannshardt.

ANYTHING CAN BE SENT BY TELEGRAPH.—One of the latest developments of the money transfer service of this company is its extension to execute small commissions such as the purchase of candy, flowers, fruit, books, etc., for delivery at distant points. All of the directions for such transactions are contained in the money transfer message, for which of course the sender pays the usual tolls, and the orders are executed by the telegraph manager or his representatives. The system has been in use for some time and is meeting with popular approval and support.

THE EARNINGS REPORT of this company for the three months ended March 31 (month of March estimated) shows the following results:

	1916.	1915.
Total revenues	\$14,390,372.00	\$11,568,175.00
Maintenance repairs and reserved for depreciation	\$1,863,477.00	\$1,776,642.00
Other operating expenses, including rent of leased lines and taxes	8,870,305.00	7,618,070.00
Total expenses	\$10,733,782.00	\$9,394,712.00
Balance	\$3,656,590.00	\$2,173,463.00
Deduct interest on bonded debt	332,963.00	334,300.00
Net income	\$3,323,627.00	\$1,839,163.00

ROTARY CLUB.—At the Rotary Club luncheon held at the McAlpin Hotel, New York, April 20, the attendance was exceptionally large. Mr. A. C. Kaufman, general commercial agent, addressed the members. His subject was "The Telegraph Applied to Modern Business" and the value of the telegraph in salesmanship was fully shown. His talk was well received. A novelty was the invitation in the form of a personal night letter from Commercial Superintendent J. F. Nathan to each member of the club to attend on "Western Union Day." It conveyed a most impressive demonstration of the effectiveness of a telegram as compared with a letter. The members of the club did not fail to grasp the importance of the demonstration.

CONFERENCE AT KANSAS CITY.—A conference was held at Kansas City, Mo., April 11, between local officials and employes and officials and managers from other points. "How to Sell Telegrams" was the subject of the discussion, which was followed by a dinner at the Hotel Muehlebach. Among those present, besides the local officials, were A. C. Cronkhite, district commercial superintendent; W. H. Spain, district commercial manager, and W. J.

Armstrong, traffic supervisor, of St. Louis, Mo.; A. E. McGrath, division commercial manager and A. E. Eldridge, division cable manager, Chicago. The managers of Springfield, Sedalia, St. Joseph, Joplin, Carthage, Webb City and other Missouri towns were also present.

CONFERENCE AT WATERTOWN.—A conference was held at Watertown, N. Y., April 21, between Mr. W. A. Sawyer, district commercial superintendent, and the managers of the Adirondack district offices. Those present, besides Mr. Sawyer, were Mr. John Simmonds, division commercial agent; G. O. Bentz and J. E. Mendelson, commercial agents, New York; Messrs. F. J. Dobbs, manager, C. E. Comstock and Misses I. J. Connelly and Hazel M. Brown, Watertown, and the following: C. E. Chase, Alexandria Bay; G. H. Marsh, Antwerp; L. H. Jenks, Carthage; Miss L. Dewey, Clayton; B. A. Munson, Dexter; B. D. Persee, Fulton; H. A. Rogers, Gouverneur; A. R. Gilbert and K. F. Rice, Ogdensburg; M. Coons, Massena; J. M. Carey, Oswego; A. D. Peck, Pulaski; J. E. McKee, Waddington; Miss Violet Anson, Alexandria Bay; W. G. O'Brien, Minetto, and E. J. Comstock, Watertown. At the conclusion of the business meeting a luncheon was served.

CONFERENCE AT UTICA.—Managers of offices in the Utica, N. Y., district were present at a conference held in that city, April 20. Mr. M. J. McCarthy, manager of the Utica office, presided. Those present were Messrs. W. A. Sawyer, district commercial superintendent, John Simmonds, division commercial agent, Messrs. G. O. Bentz and J. E. Mendelson of Mr. Sawyer's staff, New York, and the following managers: Miss N. Ward, Boonville; Miss McCann, Canastota; S. Fonda, Jr., Cortland; J. W. Howson, Cazenovia; F. T. Watson, Clinton; J. H. Sammons, Canajoharie; M. P. Kyser, Fort Plain; G. P. Munson, Herkimer; Thomas Leahy, Ilion; E. H. Ford, Lake Placid; D. S. Peet, Laurens; E. Shanley, Little Falls; F. S. Delisle, Malone; Mrs. M. K. Balcom, Norwich; A. R. Porte, Ogdensburg; F. J. Lynch, Old Forge; F. J. Dedrick, Oxford; Mrs. J. N. Bell, Oneida; O. M. Greene, Saranac Lake; W. B. Bishopp, Waterville.

Morse Electric Club Dinner.

The spring dinner of the Morse Electric Club was held at the Hotel McAlpin, Thirty-fourth Street and Broadway, New York, on the evening of April 27, this date, it should be mentioned, being the 125th anniversary of the birth of Prof. S. F. B. Morse. During the dinner there was orchestral music and singing, and after it, there was a first-class vaudeville entertainment by professionals and by some of the talented members of the club. The dinner was an excellent one and well served, and much enthusiasm prevailed. There was no speech making.

Mr. A. G. Saylor presided, and at his table sat President Newcomb Carlton, Vice President G. W. E. Atkins, retiring Vice President A. R. Brewer, Commercial General Manager J. C. Willever and Secretary W. H. Baker. All of the other officials

were present and there was a marked absence of formality, all being on an equality.

Owing to the shortness of time before going to press we are not able to arrange the names of attendants for publication as has been our custom heretofore. There were nearly two hundred telegraph people present, many being from out of town. Among the latter were M. B. Wyrick, Chicago; H. F. Taff, Washington; V. J. Albert, Baltimore; J. W. Reed, Philadelphia; E. C. Keenan, Chicago; W. P. Cline, Wilmington, N. C.; T. D. Lockwood, Boston; R. W. Pope, Elizabeth, N. J.

THE CABLE.

MR. WILLIAM BELLAMY, for many years superintendent of the Anglo-American Telegraph Company's cable station at Hearts Content, Newfoundland, but who retired from active service two years ago, has the sympathy of his numerous friends in the death of his wife in London, April 18.

TOBACCO FOR MIDWAY ISLANDERS.—A consignment of cigars, cigarettes and smoking tobacco, valued at \$1,000, is en route to the Midway Island cable station of the Commercial Pacific Cable Company. It was sent with the compliments of Mr. Wilson F. Pulsifer of Chicago to the men of the station as a "little remembrance" of the kindnesses shown to the passengers of the steamer "Mongolia," which ran aground on Midway in September, 1906. Before the steamer was refloated 500 of her passengers visited Midway.

Cable Interruptions.

Interruptions to submarine telegraph cables are reported to April 25 as follows:

Azores and Emden (two cables), August 5; Shanghai and Tsingtau, and Tsingtau and Cheefoo, August 24; Sweden and Germany, September 30; Almeria and Melilla, October 1; Penogomera and Alhucempas (defective cable), October 1; Yap and Menado (offices closed), October 7; Obock and Djibouti, November 6; Constantinople and Tenedos, November 6, 1914.

CANADIAN NOTES.

MR. E. POPE, superintendent of government telegraph service, Quebec, Que., was a New York City visitor last week in connection with his multiplex telegraph system which he is about to place on the market. Mr. Pope was appointed superintendent in 1863 and has been actively engaged in the telegraph service in Canada since 1855. He called on many of his old telegraph friends while in the city.

QUICK TELEGRAPH SERVICE.—A telegram was filed with the Canadian Pacific Railway Company's Telegraphs in Ottawa, Ont., to a broker in Montreal, who forwarded the order to New York via the Canadian Pacific and Postal Telegraph-Cable lines. The order was executed on the stock exchange and advice sent to the Montreal broker and reforwarded by him to his correspondent in Ottawa. The time occupied in the various movements was as follows: Montreal received from Ottawa 2.49; de-

livered to broker 2.50; sent to New York 2.51; order executed and advice received at Montreal 2.53; advice from Montreal broker sent to Ottawa 2.55; delivered 2.56; total time occupied seven minutes.

THE TELEPHONE.

MR. THEO. N. VAIL, president of the American Telephone and Telegraph Company, New York, returned on April 17, from a trip to Guatemala.

MR. G. W. PECK, representative of the Bell interests at the Panama Pacific Exposition, San Francisco, has returned to New York. After the closing of the fair Mr. Peck gave demonstrations of the transcontinental telephone service at Los Angeles, Portland, Seattle and other Pacific coast cities.

TELEPHONE PIONEERS' CONVENTION.—The convention of the Telephone Pioneers of America will be held at Atlanta, Ga., October 19 and October 20. The committee of arrangements consists of Mr. J. Epps Brown of Atlanta, Ga.; A. L. Salt and B. A. Kaiser of New York. Mr. R. H. Starrett, 15 Dey Street, New York, is secretary.

LIGHT PORTABLE TELEPHONE.—A portable telephone, made of aluminum and weighing two and one-half pounds, the invention of a forest officer, R. B. Adams, of Missoula, Mont., will be part of the regular equipment of patrolmen on the National Forests the coming field season.

LONDON-LIVERPOOL UNDERGROUND TELEPHONE CABLE.—The underground telephone cable between London and Liverpool was completed in March. It is stated that not only are the cable lines as efficient as are the open lines in respect of transmission but the stability of communication which the cable affords will be invaluable. The length of the cable is about 150 miles.

OLDEST TELEPHONE OPERATORS IN THE WORLD.—At the Linkville exchange just outside of Kansas City, Mo., Harry Moore, aged 72 years, and his wife, Anna Moore, aged 66, plug in on the switchboard to answer calls and give connections. They give day and night service and love the work. They are said to be the oldest telephone operators in the world.

LARGE PRIVATE TELEPHONE EXCHANGE.—The Metropolitan Life Insurance Company has recently installed in its home office in New York, a five-position private branch exchange telephone switchboard with twenty-three trunk lines to the telephone company's central office, and 500 extension stations. The day after the installation was completed a count was taken of the calls sent through the apparatus. It was found that 4,500 messages originated in the home office, and nearly 400 came from the outside.

Telephone Earnings Reports.

The American Telephone and Telegraph Company's earnings report for the three months ended March 31 shows the following results:

EARNINGS:	1915.	1916.
Dividends	\$6,306,103.50	\$6,619,568.58
Interest and other revenue from associated companies .	3,445,001.38	3,380,850.18

Telephone traffic (net)*	\$1,570,773.48	\$2,141,482.13
Other sources	272,615.68	450,207.91

Total	\$11,594,494.04	\$12,592,108.80
Expenses	1,317,798.18	1,338,871.00

Net earnings	\$10,276,695.86	\$11,253,237.80
Deduct interest	1,876,605.69	1,758,005.13

Balance	\$8,400,090.17	\$9,495,232.67
Dividends paid	6,968,759.99	7,653,970.29

Balance	\$1,431,330.18	\$1,841,262.38
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* One month estimated.

The earnings report of the Bell Telephone System of the United States for two months ended February 29 shows:

	1915.	1916.
Gross earnings	\$37,732,280	\$42,012,644

EXPENSES:

Operation	\$13,453,436	\$14,632,105
Current maintenance	4,635,587	4,950,532
Depreciation	7,094,523	7,736,230
Taxes	2,164,067	2,354,021

Total expenses	\$27,347,613	\$29,672,888
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Net earnings	\$10,384,667	\$12,339,756
Deduct interest	3,196,216	3,122,313

Balance net profits	\$7,188,451	\$9,217,443
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Deduct dividends (estimated for two months)	5,200,139	5,718,490
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Surplus earnings	\$1,988,312	\$3,498,953
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Marconi Notes.

Mr. J. C. H. Macbeth, of the *Wireless Press*, Ltd., London, arrived from that city on the steamer New York.

Mr. C. H. Taylor, engineer, Transoceanic Division, New York, has returned from a protracted trip to the Pacific Coast and Hawaii.

Mr. C. B. Smith, assistant treasurer, has resigned.

The Marconi Company has leased additional space in the Edison Building, Elm and Duane Streets, New York, where it now occupies two floors.

RADIO TELEGRAPHY.

RADIO DINNER IN SEATTLE.—Several members of the Institute of Radio Engineers and their friends visiting Seattle, Wash., were tendered a dinner March 18 by the Seattle section of the Institute of Radio Engineers. The affair was in charge of Mr. R. H. Marriott, expert radio aid of the United States Navy and chairman of the Seattle section.

How to Conduct a Radio Club.

A book of recent issue with the title "How to Conduct a Radio Club," by Mr. E. E. Bucher, instructing engineer of the Marconi Wireless Tele-

graph Company of America, will no doubt fill a want among amateurs. The title seems to be rather narrow, however, as the book covers a much wider field than its title would indicate.

The book describes parliamentary procedure; indoor and outdoor experiments; a 5,000-mile receiving set, and contains, besides, many other features. The scope of the work can be best judged by the titles of the subjects of the thirteen chapters, which are as follows: Advice for amateur; the formation of a radio club; instruction in the telegraphic codes; a 200-meter amateur set; an amateur's wave meter and its uses; the measurement of the logarithmic decrement; explanation of the theory of operation of the receiving tuner; receiving tuners; the vacuum valve amplifier; "break-in" systems; the radio variometer; amateur wireless telegraphy during the summer; an amateur portable wireless set.

The price of this work, which is bound in red paper cover, is 50c. per copy. Copies may be obtained of TELEGRAPH AND TELEPHONE AGE, 253 Broadway, New York.

An Interesting New Book for Telegraphers.

Mr. Jeff W. Hayes, the well-known old-timer and author, has just brought out an interesting and unique volume of telegraphic stories, which no doubt will meet with a hearty reception in the ranks.

It is some years since a book of this character made its appearance, and the fact that such books do appear once in a great while is evidence that operators have not yet lost their appreciation of telegraphic literature of the lighter vein.

This new book is full of life and, like many personal characters one meets, will "take" at sight.

It has the unique distinction of being at once personal and impersonal. There are many pages containing facsimile reproductions of the signatures of officials, managers, operators and other employees in many of the large offices in the country and of other persons who were formerly in the telegraph service. This feature of the book gives it a distinctive and personal character, and it is certainly interesting and "catching." Throughout the pages are scattered half tone portraits of many well-known old-timers.

The stories are, in the main, new and relate to western life and experiences, many of the contributors being well known to the telegraph fraternity and of acknowledged reputation as writers. Interspersed throughout the book are several poems which will appeal to those of a poetic nature.

The autographs fasten the attention of the reader and recall many pleasant memories and experiences over the wire in years gone by. Many of the names are familiar and they all make a character study of deep interest.

It is not an easy task to produce a book along new lines in these days of easy and rapid book making, but Mr. Hayes has certainly tapped a virgin field, and telegraphers in general ought to give his enterprise their support.

The price of the book is \$2.50 per copy and copies may be obtained by addressing J. W. Hayes, 95 West Maumee St., Adrian, Mich.

Questions to be Answered.

[The following questions are based upon the contents of Jones' "Pocket Edition of Diagrams and Complete Information for Telegraph Engineers and Students," and have been prepared for the study of this book. The asking of questions to be answered by the student is an excellent method of acquiring information, besides cultivating the habit of concentration of thought which is so essential in the study of any subject. Every telegrapher who is desirous of learning the technical side of telegraphy should follow this method of instruction diligently. He will be surprised to note from time to time how his knowledge is increasing, and this almost without effort on his part. This book is sold by TELEGRAPH AND TELEPHONE AGE at \$2.00 per copy.]

Are indistinct signals due to any one cause? (page 305.)

When signals "drop out" how should you proceed to remedy the trouble?

What is the effect of a too tight adjustment of the trunnion binding posts of the relay?

How should the trunnion binding posts be adjusted to secure the best working conditions? (page 306.)

If tightening the binding posts does not remedy the "dropping out" of signals, what other course should be pursued to locate the cause of the trouble?

What is the purpose of the fine wire wound around the shaft of the relay lever, and what would be the effect if this wire should become accidentally broken?

How would you ascertain if a break in the local circuit, when the sounder stands "open," is in some of the relay connections?

Why should the knife-blade method of testing for a break not be used where sounders are connected in multiple?

Is it as important to give as much attention to the sending apparatus as to the receiving?

What is the electrical and mechanical inertia of telegraph instruments?

On long lines with many offices, what makes it necessary for the operator to send at a slower rate of speed in order to fully form his characters? (page 308.)

Can the blame be placed upon the key under such circumstances?

In order to gain speed under such conditions, what should be done?

Why do pole changers and transmitters require very careful adjustment to the speed of the transmitting operator?

What is the mercury arc rectifier and what is its use in telegraphy? (page 309.)

What are the features of construction of the rectifier, and why is more than one anode required in the device?

Study the theory of the instrument as explained on page 309.

How is the continuity of the arc during a complete cycle preserved in order to maintain a continuous flow or current?

What are reactance coils used for in the rectifier?

Study the operation of the mercury arc rectifier as described on page 311.

(To be continued.)

Efficiency Engineering in the Telegraph Service.

(Continued from Page 179, April 16)

Every telegraph man should remember that what makes the telegraph popular is, first of all, accuracy coupled with progress, achievement and expansion. It used to be said fifteen or more years ago that the telegraph had reached its limit and that its younger brother, the telephone, had an unlimited field before it in which to develop. This has now been changed. The telegraph has an unlimited field before it. Its development of late years has been marvelous, but vast as it has been it is nothing compared with its future growth now that the machinery along progressive lines is in motion.

Telegraph officials could well afford to offer prizes for good suggestions in efficiency methods calculated to expand and develop the service. Thousands of good ideas never come to light because the authors are not encouraged to send them to whoever could make good use of such material. It is getting to be very common in these days for manufacturing concerns to invite employes to submit suggestions bearing on the betterment of the service. Telegraph people should be asked to make the telegraph a study in their leisure moments, first with the object of greater accuracy and then for an expansion of business and its economical handling. It must be remembered that a telegraph company is required to furnish twenty people to handle one twenty-five cent telegram. Of course it goes without saying that the same twenty people can scrutinize a thousand telegrams each day. The question is to insure safety and promptness from the time the message is handed over to a messenger at one end of the country until it is delivered by a messenger to some person located somewhere at the other end of the country. The telegraph quickens the wits of men. Why not then invite these people to suggest ideas that will tend to improve the telegraph service. There is no piece of machinery so perfect that it cannot be improved. The telegraph or the telephone for that matter is not an exception to this rule.

The pension habit has taken possession of the minds of the American people. Railroads, banks, telegraph and telephone companies, express companies, schools, states and cities are providing for the old age of employes, not as a charity but impelled by the higher law of eternal justice. This is what we might term specializing; that is to say, if a young man decides to enter the telegraph, telephone or other service, he is assured from the beginning that he will be provided for until he dies. It is no longer necessary to regard this trade or that trade as merely a stepping stone to something better. It will only be a matter of a short time when the various industries will no doubt be required by law to provide old age pensions or insurance for every employe. Railroad, telegraph and telephone companies justify the millions they expend in pensions on the ground of higher efficiency. One authority informs us that states justify the millions they expend in pensions on the ground of economy, believing in the general proposition that the mother can best rear her own children and that to provide for them in the mother's home is

cheaper for the state than the maintaining of great institutions which break the family ties, and tend to make the children as they grow up untrained a liability instead of an asset to the state. Educational institutions believe that better work from clear minded men is to be obtained when the scholar can devote his time and talent to his task and can invest his earnings in his own better equipment because the school has provided for the rainy day. Motives of the higher altruism run through all these plans. If corporations desire more efficient administration then they must provide for old age so that every employe will be contented and feel that it will prove an asset to him to invest in books in order that he may be more intelligent and thereby more effective.

Salesmanship is a very live subject in these days of active competition. A World's Salesmanship Congress will be held in Detroit, Mich., in July of this year, and it is expected that thousands of delegates representing every section of the world will be present. This only goes to show to what vast proportions salesmanship has been developed. One authority informs us that a good salesman is a man who can make someone purchase something for which he has no use. This is a great mistake, and we do not commend such tactics. A telegraph man has something to sell. He has service, good service, and that means that every business in existence can utilize good telegraph service in developing new trade. There need be no misrepresentation of facts. When a telegraph drummer approaches a business man and endeavors to induce him to use the telegraph wires to increase his business he should be prepared to convince the prospective customer by argument and figures that he would be making no mistake to patronize the service. It stands to reason that if he deceived the business man he would make an enemy for the company. This should be avoided and the best method of so doing would be to stick to the truth and propose nothing that could not be carried out to a successful issue. It must be remembered that a commercial house is not in business for a day or two. Telegraph men themselves in talking with each other occasionally refer to some case of misrepresentation on the part of the tailor or shoemaker with the result that the business of these concerns is damaged to a more or less extent. So, too, with a telegraph company. If the service rendered is not gilt edged at all times proper explanations should be made excusing the shortcomings of the service which were perhaps due to circumstances beyond the control of human power. Every business man knows that his own establishment is not a perfect machine and he can hardly expect a telegraph system with lines extending to all sections of a vast territory to run smoothly day after day without suffering a breakdown of some kind.

It is always a good argument to use with a customer that it is much preferable for a concern to have one hundred customers instead of ten or twenty. It must be remembered that the overhead expense is just the same. That means that it costs no more to handle the additional business from fifty or seventy-five new customers than it does to attend to the orders coming from ten to thirty people.

(To be continued.)

Ohm's Law.

BY J. B. DILLON, WESTERN UNION TELEGRAPH COMPANY, LITTLE ROCK, ARK.

There seems to be a dread among many that to memorize the three cases of Ohm's law one must carry a stamped medallion with the symbols thereon, or use some magic word. Nothing of the kind. The law is $I = E \div R$, $R = E \div I$ or $R \times I = E$. Now in every case where we have a certain voltage and a known resistance, we know that the electromotiveforce E must be our dividend. Therefore you are only to remember that one simple thing, that E is always a dividend, when you know your current or resistance. It naturally follows then that to divide E by R will give I , or electromotiveforce divided by resistance gives the current, or if electromotiveforce is divided by current it gives resistance.

If you have your current and resistance but wish to know the electromotiveforce you simply multiply the two known values and you have E , thus: $I \times R = E$.

After all, a small memorandum book should be carried in the pocket and the formula inscribed. Let nothing worry you, but go into other fields, make notes and as you stop to rest, read your notes. Simple, isn't it?

The "Erie" Short Cut.

BY C. R. LANGLEY, CITY FOREMAN, WESTERN UNION TELEGRAPH COMPANY, VANCOUVER, B. C.

With all due respect and apologies to Mr. R. M. Telschow, the author of the article printed in your April 1 issue on "The 'Erie' Short Cut," allow me to offer a little friendly criticism.

I am free to admit that it is an unique way to handle the formulæ, and yet, suppose we do remember "Erie," what assurance have we that we can remember the necessary juggling required to arrive at the desired result, especially in this day of multifarious breakfast foods? Any way, it's a long way from Vancouver to Erie.

I presume I have had as infrequent occasion to use these formulæ as any one in the electrical business, but since adopting the following plan, have never failed to recall the exact arrangement when

needed. Here it is: $\frac{E}{C R}$, where $E = \text{e.m.f.}$, $C =$

current and $R = \text{resistance}$. Arrange any problem according to this and the missing term can be readily obtained by following the rules of simple arithmetic. Did I hear you ask: "How do I remember the arrangement of the letters?" That's a secret, but I'll tell you. My initials are C. R., so I simply put the E over the bar and then "get out and get under." See? Simple, isn't it? Then I imagine I hear some one say: "What if his initials hadn't happened to be C. R.?" Well, suppose my name had "happened" to be John Isaac. Use it just the same by putting E above the bar, as in the other case. Then "get out and get under," also as in the other case, and let $J = \text{Juice}$ and $I = \text{Impedimenta}$, and there you are again.

Always remember "The Power Above," and the

other terms are necessarily below and can be transposed without changing their value.

Just make the formula $\frac{E}{C R}$, paste it in your hat,

or better yet, in your memory, and you will always have Ohm's law at your command.

Opportunities in Messenger Service.

The telegraph companies, increasing their activities among their employees in numerous ways such as in pension funds, pay on vacations, bonuses and other rewards for faithful service are now improving the status of the messenger, and more and more attention is being paid to his welfare, says a writer.

In reviewing the lives of many distinguished men it is something to marvel at to note the large number of men who tell with pride of the days when they were messenger boys or sold newspapers, for most boys who engage in one engages in both of these occupations.

When one considers the great value of character building in the messenger's occupation it is easy to trace leading qualities of after life to the days when a man struggled faithfully through sunshine or storm to deliver the papers or messages intrusted to him.

There are some who shudder at the work of the messenger, taking their idea of his occupation from the comic pictures which show him either idling with a dime novel or shooting craps. The lad of that type does not last long and is submerged by his competitors in a manner to teach him life's lesson early enough to enable him to revise his start in life.

For the bright boy who is eager to earn money, to obtain training in filling a responsible position, and who wants to develop qualities which will bring him to the front there is no better chance than in messenger service.

He is placed upon his mettle and impresses his superiors accordingly as he takes his task with grim determination to make good no matter how unpleasant the assignment, or whimpers as he is sent on a long tour. In his work he learns how to do his task promptly, courteously and intelligently. His resourcefulness is often taxed, the person sought may be inaccessible until he has used his wits in locating him. He is trained in courage, honesty and in the excellent virtues that are embodied in self-support. He works chiefly in the open air and becomes rugged and proof to all kinds of weather. He comes under observation of the men who are looking for the best type of boys.

The messenger service, like that of the carrier boy, is a school of self-reliance.

Mr. G. O. Summers, manager, Western Union Telegraph Company at Lynchburg, Va., in remitting to cover his subscription for another year writes: "It gives me pleasure to enclose check for \$2.00 covering renewal of my subscription to TELEGRAPH AND TELEPHONE AGE."

Early American Telegraph Companies.

In our February 1 issue was given an account of the birth and growth of the first American telegraph company—the Magnetic Telegraph Company. This company built lines between Washington, Baltimore and New York, and afterwards the erection of a line between Washington and New Orleans was suggested.

Mr. Amos Kendall, one of the promoters and organizers of the Magnetic Telegraph Company, was the leading advocate of a southern line and in September, 1846, he wrote a letter to a friend in New York in which communication he outlined the desirability and the probable success of such an enterprise.

Acting upon the evidence in his possession of the great value of a telegraphic connection with the cities of the south, measures were early taken to construct a line to New Orleans via Wilmington, N.C., Charleston, S.C., and Montgomery and Mobile, Ala., and in November, 1846, a contract was executed between the patentees and John J. Haley, of New York, for the construction of the line. The patent was placed in the possession of three trustees, with directions to issue it only on the fulfillment of the contract and the completion of the whole line by October 1, 1848. The terms of the contract were \$150 per mile of a single-wire line and \$200 for one of two wires. The patentees were to receive an amount of stock equal to that issued for the construction. The New York, Albany and Buffalo Telegraph Company was to be recognized as the model for the construction of the line south, except that the number of poles were not to exceed twenty per mile. This was Mr. Kendall's plan to secure insulation, by diminishing the points of contact. Subscriptions were speedily and easily obtained for the whole line, with ten per cent. paid down at the time of subscribing. The amount subscribed was in all \$280,850. The capital stock was \$561,700. Mr. Haley chose a good assistant in Charles S. Bulkley, who left the New York office to be Haley's engineer.

When the line was opened for business it was flooded with messages, and became an important feeder of the line to New York. When the communication was unbroken the volume of business was very large. Yet such was its irregularity that the Magnetic Telegraph Company, in order to control and develop it, was enabled to lease it, July 7, 1856, for ten years, at an annual rental of four per cent. on the capital stock and half of all profits over eight per cent. By the terms of the lease the lessees agreed to spend at once \$25,000 on permanent improvements, and all the excess over four per cent., in rendering the line thoroughly reliable and equal to its best portions. One of these improvements was an increase in the number of poles. The commissioners of the Washington and New Orleans line in perfecting this important contract were Amos Kendall, Edward G. Hyde and W. M. Goodrich. John Kendall was appointed general superintendent of the united lines from New Orleans to New York. Since that period the history of the company has been merged with the Magnetic and American and Western Union companies, under

whom the route has been made one of the most reliable and uniform of any in America. The whole structure was thoroughly rebuilt, furnished with wires of the highest capacity, and planted along the railroads.

For some years after the construction of the Washington and New Orleans line, Charles S. Bulkley acted as superintendent and Elam Alexander as president. Mr. Bulkley, while so engaged, invented the earliest of the automatic repeaters which enabled messages to be sent direct from New York and Washington to New Orleans. In doing so the line was divided into ten circuits, with a repeater for each. Bulkley's repeater was of the open circuit type. By some it is still regarded as unexcelled.

Bulkley concealed his invention from prying eyes and expert "improvers," by adopting Alfred Vail's plan of fitting up the connections by such a wondrous maze of wire ringlets as effectually bothered and defeated investigation.

Like all other lines, much of the value of the Washington and New Orleans line grew out of the patience, the skill and fidelity of its employees.

The final value of this line, when its great points of profit were connected under a single administration and reached by a single writing, was another revelation of the secret of telegraphic success, which every year made more and more apparent.

Telegraph Oddities.

He telegraphed for rates but the dot dropped out and he got rats instead.

A constituent a few days ago telegraphed his congressman asking how he stood on a certain international issue. "I do not stand on it at all, I sit on it whenever the opportunity is given me," was the reply.

A theatrical manager needed some one to take the part of a colored boy in his play. He rang up a messenger, blackened him up and the "mercury" acquitted himself like a professional. The messenger boys are equal to any demand made on them.

A queer case of a difficult cross to locate was caused by a lady operator who had a canary bird in the office. Two or three times a day she would hang the cage near the switchboard where the wires of the cage connected several important circuits and put them out of commission.

Among the common causes of wire trouble that have been brought to our attention recently are the following: On one of the western railroads there had been a wreck. One of the freight cars was loaded with wheat and the wheat was scattered for some distance along the tracks. The birds soon found the food and they flocked there in large numbers. While one relay of birds was eating, another flock would perch on the telegraph wires. Their number was so great that the weight sagged the wires until they came in contact with one another. The crosses caused the wire chiefs some anxious moments because of the difficulty in determining the cause of the trouble. Every few minutes the wires would come clear and just as often they would become crossed.

The Tying and Splicing of Copper Wire as Affecting the Quality of Service.*

BY W. H. COLLINS, PLANT ENGINEERING DEPARTMENT, NEW YORK TELEPHONE COMPANY.

The handling of copper wire has an important bearing on the continuity of telephone service. Sufficient evidence of this is always apparent in the causes of breaks due to cold. Such breaks are nearly always the result of kinks or nicks on the surface of the hard drawn copper wires, and these are caused by improper handling.

The tying and splicing of copper wires is an important factor of continuous service, although per-

FIG. 1—PROPER SPlice FROM WHICH THERE IS LITTLE LIKELIHOOD OF TROUBLE.

haps receiving less consideration from the average lineman than should be the case.

The splicing of copper wires with standard sleeves is a simple matter mechanically, and in the case of new wire, if done in a proper manner, does not present any particular difficulties. After the two ends of the wire have been placed in the sleeve, the ends should be turned up and cut off very close to the ends of the sleeve so as to prevent the sharp ends from coming in contact with the wire in the other tube of the sleeve. The sleeve should then be

FIG. 2—IMPROPER SPlice IN WHICH THE ELECTRICAL CONTACT IS APT TO BE UNSATISFACTORY.

twisted with two pairs of connectors until the required number of complete turns are made.

Fig. 1 shows a splice which has been properly made with the standard connectors. It has the correct number of turns or twists, and from it there is little likelihood of trouble.



FIG. 3—A PROPER TIE FROM WHICH THERE IS LITTLE LIKELIHOOD OF TROUBLE.

Fig. 2 shows an improperly made connection which has probably been made with pliers, and in which the electrical contact is apt to be unsatisfactory. In splicing copper wire which has been in service for any length of time and has therefore been exposed to atmospheric conditions which tend toward oxidization and corrosion on the outside

surface of the metal, it is of the utmost importance that the wires be thoroughly cleansed before being inserted in the sleeve; otherwise defective joints will surely result. Insurance against this is obtained by polishing the portion of the wires which come in contact with the interior of the sleeve with fine emery cloth before the sleeve is put on.

With the development of high-voltage power transmission lines and other factors which tend to cause disturbances in telephone circuits, and the increasing use of phantom circuits in which such disturbances are amplified, a perfect balance between the two wires of a circuit has become almost an absolute necessity. "A perfect balance" means that the two wires of the circuit must have the same resistance throughout their length. Lines which are not balanced, when subjected to the influence of foreign currents, are noisy and unsatisfactory, because of a displacement of the neutral points of the circuits. This effect is particularly noticeable in the case of phantom circuits which



FIG. 4—A TIE IMPROPERLY AND CARELESSLY MADE.

are much more susceptible to external influences than ordinary circuits. In phantom circuits also the requirement for a perfect balance is much more severe.

A case of this nature recently came under the writer's observation. A phantom circuit was to be established and the wires had been transposed and preparations made to cut the phantom into service. The final test indicated a difference in the conductivity of the two wires of one of the physical circuits, amounting to about two ohms. This unbalance was finally traced to one splice, upon the removal of which a perfect balance appeared without further difficulty. This splice had not been properly made, nor, apparently, had the wires been cleaned before the sleeve was placed.

There is another important reason why it is so necessary that perfect conductivity be insured; in the location of trouble, the test board operator has recourse to calculations which assume a uniform condition of resistance, and in the event of any appreciable variation his calculations will be misleading and the location assumed may be found considerably at variance with the fact. If there are several defective splices in a circuit, the fact

*From The Telephone Review.

may not be apparent from the ordinary tests, as the defects may balance each other, although located at points a considerable distance apart. This may lead to large errors in the location of troubles.

Many different methods of tying the line wire to the insulators have been tried and discarded. Some of the telegraph companies have used a single sleeve over the line wire, the center of the sleeve being opposite the center of the insulator and the tie being placed over the sleeve. The method at present in use is considered the most economical both from the standpoint of construction and maintenance. It consists of the simple operation of laying the line wire and tie wire in the groove of the insulator, passing the tie wire entirely around the insulator once, one end being brought down over and the other end brought up under the line wire in opposite directions, and the two ends being wound five times around the line wire.

There are some features of this work that are deserving of attention, viz.: a satisfactory tie will not result if anything but new, thoroughly annealed,



FIG. 5—EFFECT OF SNOW, OR SLEET, OR OTHER HEAVY STRAIN ON A POOR TIE.

copper tie wires of the same gauge as the line wires are used. Sometimes improperly annealed wires may be found, and in some cases where workmen run short of tie wires it has been the practice to use line wire cut up into the proper lengths and heated in a bonfire built in the vicinity of the work. In other cases tie wires have been re-used. Without considering in detail the results of this class of workmanship, the invariable failure to hold the wires properly in place has a detrimental effect upon the service.

Fig. 3 shows a copper line wire tied to the glass in the proper manner. The tie wire has been given the required number of turns and the ends cut off neatly. There is little likelihood of trouble resulting from a tie placed in this manner.

Fig. 4 shows a tie which has been improperly made. In this case, it is evident that an old tie wire has been used, as it was too short for the required number of turns.

Fig. 5 illustrates what happens where the ties have been improperly or carelessly made, when the line wires become loaded with heavy snow or sleet, or are otherwise subjected to an unusual strain.

Another important factor related to this subject, is the position of the line wire on the insulator. On straight line work the line wire should always lie on the side of the insulator next to the pole, except the two inner (pole pin) wires which are placed in the side away from the pole. On curves, however, all line wires should lie on the side of the insulator away from the center of the curve in order that the strain may be taken by the pin and insulator instead of by the tie wire.

Owing to the fact that it is not practicable to build a pole line over any route without angles and curves, and that it is impossible to establish a grade that will be uniform and avoid dips and rises within certain limits, it can readily be seen that much rests on the integrity of the tie. During the winter months, or in heavy windstorms, the strain on the wires is greatly increased, and loose tie wires are then productive of troubles which may be cleared only after considerable hardships on the part of the repair man, to say nothing of the expense or loss of service which is occasioned.

Early Western Telegraph History.

Mr. Isaac Morris, president, Railroaders' and Telegraphers' Aid Society of Cleveland, Ohio, in his annual address before the society recently gave some interesting historical information covering the earliest days of the telegraph in that section of the country.

The 150 miles of telegraph line forming the first portion of the Lake Erie Telegraph Company projected in 1845, was built from Pittsburgh to Cleveland under the supervision of Heman B. Ely, one of the Rochester, N. Y., stockholders of the company. A good subscription list was obtained in Cleveland and on January 19, 1848, the line was working from Buffalo to Detroit and from Cleveland to Pittsburgh.

The office at Cleveland was opened by C. E. Wheeler and H. C. Hepburn, August 30, 1847. (Mr. Hepburn died about a year ago at his home on Long Island, N. Y. He had been for the previous thirty odd years a member of the New York Stock Exchange.) Buffalo was opened January 19, 1848, by H. C. Hepburn. Erie was opened January 24, 1848, by Don Mann.

Although the route was apparently an important one, and the line had been opened under somewhat popular auspices, for some time business was very light. The business for the month of January, 1849, showed:

	Receipts.	Expenses.
Buffalo	\$212.30	\$122.51
Erie	59.86	53.86
Cleveland	317.88	283.90
Pittsburgh	283.94	123.04
Detroit	178.91	129.39

Heman B. Ely made his home at Cleveland, which was the natural center of control. The "Lake Line" finally became a part of the basis of the future capital of the Western Union Telegraph Company. From such early beginnings the great field of telegraphic industry developed.

Printer Systems*

BY H. A. EMMONS.

In an address delivered before the Western Union Educational Society of New York, Mr. H. A. Emmons, of the engineering staff, gave a brief history of the various printer telegraph systems and followed it with remarks on the maintenance of automatic circuits, particularly the Barclay, the general principles, however, applying to any printing system.

The portion of his address relating to the historical features is as follows:

The earliest form of printing telegraph used in the United States was that of Royal E. House, the use of which was begun in 1847-48, and continued for many years. This system employed a keyboard, the depression of a key of which resulted in the printing of a given letter on a strip of paper at the receiving station. The speed of transmission by this system was about fifty words per minute. It was operated on lines up to 1,000 miles in length. The Morse interests endeavored to bring this telegraph printer within the scope of the Morse patents, but were overruled by the courts.

David E. Hughes, of Kentucky, brought out a synchronous printing telegraph in 1855. This machine was used to some extent in this country, but was abandoned, and is not now used at all in the United States. It is extensively used in England and on the continent of Europe, about 1,000 sets are in daily use. This system uses a keyboard not unlike a small piano, the depression of a key on which results in the printing of the corresponding letter on a paper tape at the receiving station. The paper tape is afterward gummed to the delivery blank. This system works well with the duplex balance, and good operators attain as high as sixty messages per hour or 120 messages per circuit.

In 1872 Jean Maurice Emile Baudot, an employe of the French telegraph service, concurrently with his study of telegraph apparatus, undertook to combine the advantages of the multiplex system of Delany and Meyer, with the Hughes' printing system, both of which systems had just been brought into use in France and Germany. To this end he adopted the code of Gauss and Weber (1834) which utilizes five positive and negative impulses for each letter.

In the latter part of 1874 he produced his first receiver, which was then purely electrical, but his means were far too slender to allow him to develop his ideas and early in 1875 he submitted his inventions to the French administration, giving them the right to use if they would adopt them. He continued to perform his ordinary operating duties, carrying on his researches after office hours, until June 1875, when the administration accepted his invention and sent him to the factory to make an experimental set. The first trial was made the same year with sufficient success to justify the construction of a five channel set, and in 1877 the system was definitely adopted.

The Baudot system consists essentially of three parts,—(1) the keyboard, (2) the distributor, and (3) the receiver or printer.

The keyboard consists of five keys, arranged to send out all negative impulses until one or more of them are depressed. For example, depressing key 1 makes the letter A, by sending to line one positive impulse followed by negative impulses.

The distributor is an ebonite disk on which are mounted, in a circle, brass rings and bars forming a commutator; the inside ring is connected to the line and the brass bars are connected to the contact points of the five keys of the keyboard or transmitter. A brass yoke carrying the brushes is mounted on a spindle and arranged by a suitable driving mechanism to rotate carrying the brushes into contact with the various bars and rings.

The distributors may be arranged for one to six transmissions, and by the use of the duplex balance, as many as twelve channels may be obtained on suitable circuits. One distributor is required at each end of a wire. These distributors are run in synchronism from weight driven motors; synchronism being obtained by suitable governors, and by a correction device which receives a correcting impulse once each revolution of the brush at the sending station. In practice the receiving distributor is run slightly faster than the sending distributor, and correction is made by means of a mechanical-electrical contrivance which sets the brushes back at one end of the circuit. The distributors are run ordinarily at a speed of 180 revolutions per minute, or about thirty words per channel.

The printer is a mechanical-electrical contrivance having a typewheel driven by a suitable motor. On the rim of the type wheel are embossed the letters of the alphabet, the numerals and punctuation marks. The printing is performed by pressing a paper tape against the type wheel. This tape is afterwards gummed to the proper forms.

This system has been in constant use in France since its first development in 1875, and its use is being rapidly extended into England, Russia and Germany.

The underlying principles of the Baudot are good, and it is possible to use it for page printing instead of tape printing which has been done by Donald Murray in his multiplex system.

Murray has applied automatic transmission by means of a perforated tape, which is prepared on a keyboard perforator, and page printing to the Baudot multiplex distributors.

From 1874 until about 1907 when Professor Rowland brought out his ingenious multiplex system using alternating current no far reaching development in printing systems was brought out. Professor Rowland's system was used by the Postal-Telegraph-Cable Company for some time experimentally, but was abandoned. Italy has several Rowland circuits still in service, but the system is not being extended.

You are familiar with the Barclay system which we have had in use for about nine years. About four years ago the Morkrum Company brought out its system using the Baudot code and single channel transmission.

The multiplex is based on Donald Murray's conception of the multiplex page printing system. We

*Abstract from Year Book for 1915 of Western Union Educational Society of New York.

have modified it in many particulars and added to it in others.

In any printing system the alphabet or code used is of the first importance. The so-called Baudot code which was first used by Gauss and Weber in 1834 is the shortest code so far developed for land line work. It uses but five units per letter whereas American Morse is approximately eight units, Continental Morse approximately nine units, Barclay thirteen units, Hughes fifteen units, Morkrum eight units.

The quadruple Baudot system as operated uses $5\frac{1}{4}$ units per letter as an extra impulse is required for synchronism. In the multiplex five units per letter are used. This gives the multiplex a considerable advantage. The signaling speed of our wires is limited and the fewer number of impulses per letter used the greater the capacity of the circuits. For example, the multiplex at any given frequency has a capacity of a little more than double the Barclay, a gain of 50% in wire capacity alone. In addition to this gain the system does not require any transmitter operator and there is a consequent gain in staff economy.

The Telegraph Beat the Horses.

The following story relating to the early days of the telegraph will be read with interest by present-day telegraphers and newspaper men:

When the first telegraph message was sent from Baltimore to Washington, in May, 1844, it naturally created great excitement and speculation over the entire country. Along the Hudson river people were especially interested, because they heard that a line was to be built from New York to Albany.

The work progressed slowly during the summer and farmers for miles around came down to the state road whenever they had a spare moment to see what the strange contrivance looked like. They shook their heads doubtfully at each other and would say: "There's nothing to it," "Trees and wire can't carry words," or "Even gossip won't travel over a thread."

Prophets were numerous who declared that in less than a year the wires would be rusted and the poles blown over by the wind.

As the time for the completion of the line drew near curiosity increased. Then the editor of a New York newspaper offered \$1,000 for the first copy of the governor's message, read before the state assembly in Albany on January 1, which should reach the newspaper office in New York. The precious document was to be delivered to the telegraph enthusiasts and to a special messenger at the same time. But as the distance was 160 miles, some one suggested that the people along the route get up a relay race. The man who received the copy from the governor's hand was to carry it ten miles and deliver it to the next rider. He in turn hurried with it to the third one waiting, and so on until New York and victory were reached. What would become of the paper given to the agent of the telegraph company no one had an idea.

The day of the race was clear and cold, with

everything in readiness. All along the road men, women and children had gathered to see the riders.

When the last rider reached the city he heard newsboys calling an extra. Suddenly it dawned on him, and he pulled his horse up short. "Extra paper! Just out! Full copy of the governor's message."

At the newspaper office all was excitement.

"You and the other boys made a record run," the manager said, "but the wires beat you."

A Lesson in Government Ownership of Telegraphs.

It has been notorious that the government-owned telegraph systems throughout Europe have been operated at a deficit, says *Postal Telegraph*, and that these deficits have been made up by the taxpayers. Now that taxes, multiplied many times, are needed to pay war costs, the governments have been compelled to make the various government-owned utilities self-supporting, if that is possible. Great Britain was the first to realize the necessity by advancing telegraph rates 50 per cent., and in a report dated February 21, made by the committee appointed by the British government to look into the question of retrenchment in the public expenditure, the government-owned telegraphs is discussed as follows:

"The history of the telegraphs is most unsatisfactory. They were taken over in 1870 at a cost (including capital expenditure on extensions) of £10,129,687 [£1=nearly \$5.00 American money]. in the anticipation that they would yield a profit to the State. After the second year of post office management the profit failed to cover interest on the capital outlay. Year by year the financial position has grown worse. In recent years the loss upon working has not been less than £1,000,000 a year, and this loss includes nothing for interest due to the State upon the aggregate losses of previous years. In the year 1911-12 the post office calculated the accumulated loss at £21,796,520, or double the amount of the original purchase money. We are informed that this unfavorable result is due to the considerable reductions of charges which have been made from time to time, sometimes with little or no regard to the prospects of maintaining a profit.
* * *

This, in a few words, sums up the failure of government ownership of the telegraphs in England, and is explanation sufficient why they have been compelled to raise their telegraph rates by 50 per cent. Now Germany has made a big increase in telegraph rates. The very latest report is that Australia will increase telegraph rates in order to avoid the repetition of a deficit of over \$3,000,000. A government can no more give something for nothing than an individual can, and while deficits may be covered up by taxation the day of reckoning eventually arrives.

Mr. G. O. Bentz, district commercial agent, Western Union Telegraph Company, Binghamton, N. Y., in remitting to cover his subscription, writes: "TELEGRAPH AND TELEPHONE AGE has afforded me considerable pleasure and it is helpful to me."

The Old-Timer and Old "195"

BY WILLIS H. JONES, NEW YORK.

The old-timer, like the old guard, may die but he never surrenders. For this reason one can fancy old "195" in spirit form standing proudly in front of its successor, 24 Walker Street, and after viewing that magnificent structure, soliloquizing as follows:

"Huh! You haven't got anything on me. I'll admit you're grand, but that aint everything. In my day I 'seen my duty and done it.' See if you can do yours relatively better before you crow over me. You're just different, that's all."

And there is much truth in the closing sentence. Speed and economy have been attained by substituting mechanical for manual labor but old "N. Y." is proud of the quality of work it did. It also points with pride to the character and calibre of the men it developed and harbored in its day, among whom are Thos. A. Edison and Stephen Dudley Field, inventors; Robt. J. Wynne, a member of President Roosevelt's cabinet and consul general at London; the late P. V. DeGraw, fourth assistant postmaster general, Washington, D. C.; the late W. J. Johnston, founder and proprietor of the *Electrical World*; Walter P. Phillips, general manager of The United Press and The Associated Press; Chas. C. Adams, vice-president; Chas. P. Bruch, vice-president; Minor M. Davis, electrical engineer; J. F. Skirrow, associate electrical engineer of the Postal Telegraph-Cable Company, New York, and many others now holding responsible positions both here and abroad. In fact it would be difficult to find any great number of prominent old-time telegraphers who have not, at one time or another, either worked in "N. Y." or paid it a visit, for the old-timer was a globe-trotter by nature and "N. Y." was the one bright star to which every ambitious operator hoped to hitch his wagon at least once before he died.

Traveling, in the days when old "N. Y." was in early bloom, was an inexpensive matter for telegraphers and we hesitate to tell those Walker Street youngsters why, for fear the knowledge of the "perquisites" we enjoyed might make them turn green with envy. But the fact is that in those good old days the telegraph operator in many small towns ranked in importance next to that of the mayor. The prettiest girl in the village was his for life if he wanted her and every house had an open door for him.

When he wanted to travel all he had to do was to go to any railroad depot and prove that he was an operator and the conductors did the rest. If on arriving at his destination he found himself "broke" financially, he could usually bunk with the operator at that place till he got another position. Sometimes he could even borrow money from his host. Just think of that, sonny, when you realize how strongly you were inclined to tack your clothes to the floor last summer when they sent you to the convention and you learned that you were to room with a new man. Of course you smile derisively at this assertion and mutter something that sounds like "hot air." Nevertheless it is substantially true,

otherwise how could old-timers possibly have been the world trotters nearly all of them were.

Nor is this fraternal spirit entirely dead. In rural districts it is still very much alive. It is only in our great metropolis that one is in doubt as to whether his next door neighbor is white, black, or a horse thief. Some one has written that man's depravity began with the dawn of civilization, and when we note the marked kindlier feeling and greater hospitality one receives as he recedes from great centers we must conclude that there is some truth in those words, at least so far as they relate to that noble spirit of brotherhood so necessary for true happiness, and which was formerly more apparent than it is today.

Obviously the great changes brought about since the old-timer was a lad must be charged to psychology, or the workings of the mind. And when I recall some of the peculiar mental activities of some of the operators in old "N. Y." I am forced to believe that psychy must have been quite busy in that locality for many years and held a steady position on both the day and the night force. Otherwise how can we account for certain peculiar individual characteristics or actions on the part of those we remember best, each trait differing from that noticed in another, and by which distinguishing mark each operator demands a separate niche in the old-timers' hall of fame.

It is too bad that we have no psycho-meter or formulas suitable for working out some of the mental-activity problems put up to us in old "N. Y."

It certainly would be interesting to know just how much nerve force was required to put one well known operator, whose name we shall not mention, in that state of mind (usually around pay-day) which invariably urged him to go to Mr. Brennan and say "Now, T. B., just hit me right here between the eyes," and insist on it until forcibly removed.

Also what combination of brain forces caused another equally well known operator, on frequent occasions, to glory in acts of insubordination, knowing full well that each time he would be suspended for a week or more. The smile and pose he always assumed on such occasions in order to impress those around him with his independent spirit will readily be recalled. He shall also be nameless for he was a man that would even glory in having his deeds advertised.

Among the milder and more innocent traits for which psychology may also be responsible are the following and we would like to have them explained:

(1) Why Davy Downer invariably said "My stars!" when Sharkey made a bull, while his brother Al said something entirely different when Davy himself wrote "Nasty" yards for "Navy" yards.

(2) Why Senator Ives always ended the last part of his dinner speeches in a deafening roar, and became the official mourner and office representative at each funeral.

(3) Why Elias Cogley invariably rolled a paper ball between the thumb and little finger of his left hand when sending and Dr. Hallock was never seen without having a wooden toothpick in his mouth.

(4) Why operator Shallenberg never could describe the weather, in his desk diary, in any other words than "I can see Staten Island" or "I cannot see Staten Island."

(5) Why Giles Howlett had so little confidence in his own ability that he routed and refiled nearly every message he received and sometimes insisted upon reading the same aloud to the repeating operator before letting it go.

Then there was the strange case of Gib Merrill, admittedly one of the finest receivers in his day. No matter how fast one sent Gib always seemed to have time to spare, yet "psycho" had made some combination in Merrill's thinking apparatus that rendered him absolutely helpless whenever Billie Wallace of Chicago got after him. There was no conceivable reason for this, because Mr. Wallace was not even particularly fast, and sent good Morse. It was simply an inexplicable case of stage fright without basic grounds for its occasion, but it was a fact that every man on the night force was cognizant of.

But probably the most singular and interesting pranks played on the minds of operators concerns two old-timers named Tucker and O'Malley, who for several years worked the New York end of the first Chicago duplex circuit. Both of them were strictly gilt edge operators. In fact, Tucker enjoyed the proud distinction of being the only operator who was ever denied employment on the unique grounds that he was too fine an operator. This novel excuse was actually made by a cable superintendent in refusing Mr. Tucker's application for a position. It was explained afterward, in substance, that Tucker could copy cables coming in either Morse or Continental code all day long, no matter how badly mutilated the signals were, without ever making a bull. He always seemed to know what word was intended and put it down correctly without a break, and for the very reason that no other operator could do that he considered that the prestige of the other operators in the office, of whose work he was very proud, might be lowered unjustly by having Tucker's breakless record compared with the work of even the best man they could put in his place for relief. Probably the true reason for refusing to employ Tucker was that he was liable to be absent too frequently, but the excuse given served the purpose and at the same time vouches for his matchless ability in a way and from a source that carries conviction.

But the peculiar thing about these two operators which all remember so well was the directly opposite effect liquor produced on each. When Tucker indulged too freely he could not send a word that was readable, but he could receive anything that came along and turn out the finest copy one ever saw as long as he could see the blanks.

O'Malley, on the contrary, under similar circumstances, could not put down a word that any one could read, despite the fact that when sober his copy was almost equal in beauty to that of Tucker's, but at such times he not only could send fine Morse but he seemed to be imbued with the sole idea that he must send one hundred words per minute or as

near to it as he could get. For that reason he was really more valuable at such times than usual, because his "record" for the day would go up at least fifty per cent. without diminishing his capacity for accuracy in the least.

John Stevely, who had charge of the Chicago end of the circuit, used to say that when O'Malley got started he immediately provided a set of relay operators to take turns at receiving as soon as one could no longer stand the strain, and I don't think Mr. Stevely ever told an untruth. On pay-days, therefore, it was customary to keep a close lookout for the return of these two men from dinner and see that each got on the right side of the circuit, after which John and I could usually count on an early closing down of the overflow wires.

The only time these two operators were ever suspended on account of intoxication after they had reached their desk, that I can recall, was on one occasion when in trying to make the shift we accidentally let Tucker drop on the hard floor. The jolt not only sobered him somewhat but it made him so mad that he went to T. B. and reported "Jones has a beautiful jag on and is trying to make me receive all day." Of course their "condition" was then immediately discovered (?) and both were sent home.

Locating a Ground by Voltmeter.

The distance to a ground can be determined only approximately by means of a voltmeter, and then only when the resistance at the ground is negligible compared with the resistance of the bad wire from the testing end to the ground. To estimate the distance to the ground, connect the voltmeter across the terminals of a suitable battery and call the reading d . Then connect the same battery and voltmeter in series with the line to be tested and the ground, thus forming a circuit through the battery, voltmeter, line, and ground. Let the voltmeter reading be d' . Then, if r is the resistance of the voltmeter, the resistance of the circuit is

$$R = r \left(\frac{d}{d'} - 1 \right) \quad (1)$$

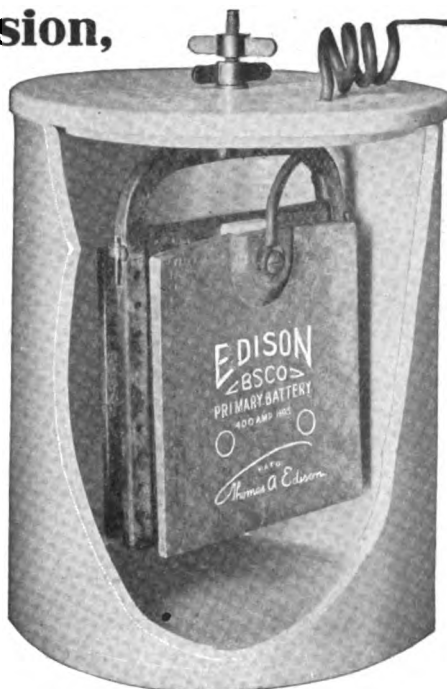
This is the same formula used in determining the insulation resistance of a line. Since the line is grounded at some point, R is only larger than r by the resistance of the line, earth return, and ground contacts. Hence, the resistance x to the ground is $R - r$ and is given by the formula:

$$x = r \left(\frac{d}{d'} - 2 \right) \quad (2)$$

SUCCESS IS NOT A SECRET.—The secret of success is not a secret. Nor is it something new. Nor is it something hard to secure. To become more successful, become more efficient. Do the little things better. So work that you will require less supervision. The least supervision is needed by the person who makes the fewest mistakes. Do what you can do and what you should do for the institution for which you are working, and do it in the right way, and the size of your income will take care of itself.—*Thomas Drier.*

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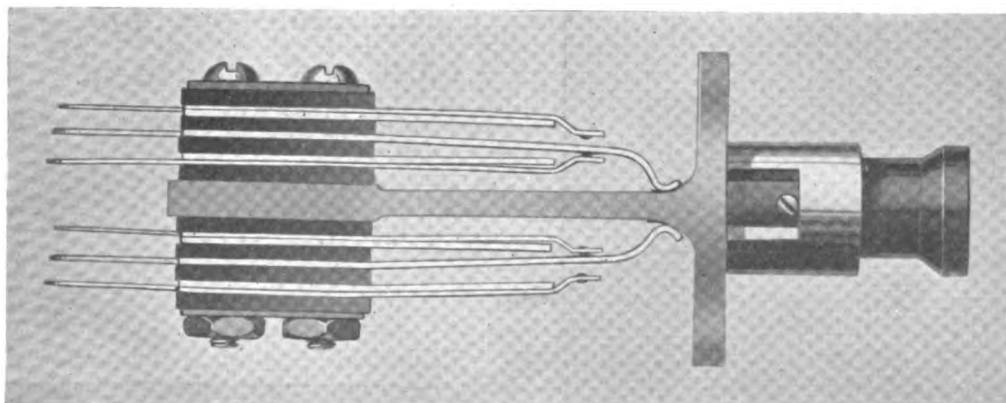
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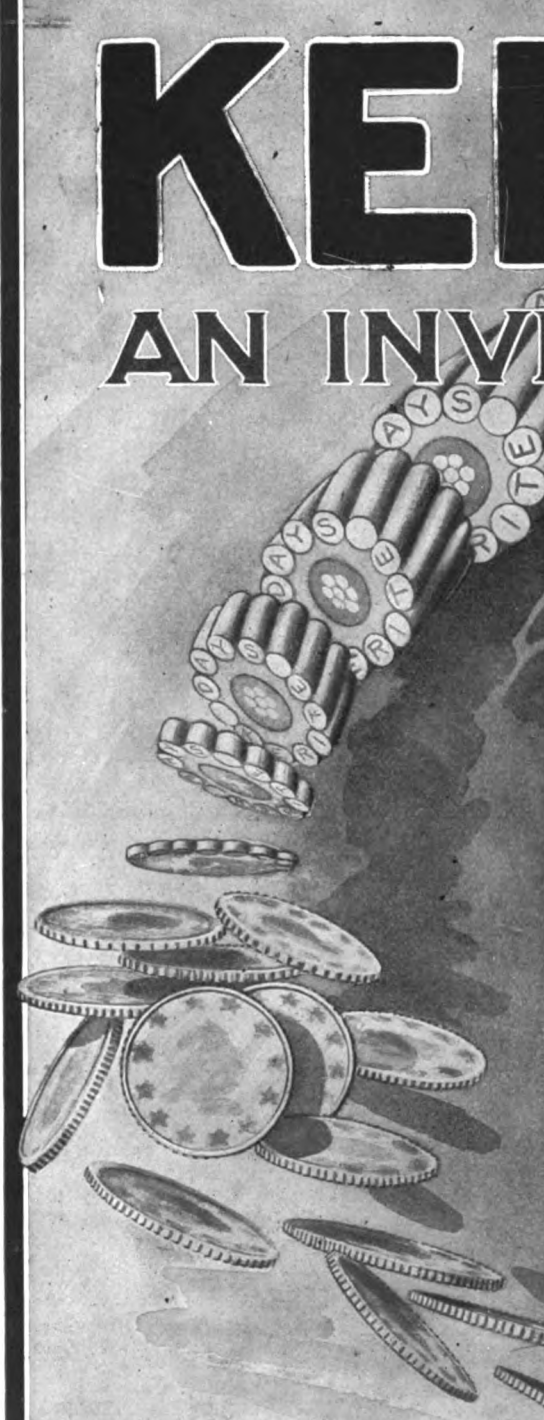
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THE RAILROAD.

MR. WORTH ROGERS, telegraph and telephone engineer, Missouri Pacific Railway, St. Louis, Mo., was a recent New York business visitor.

A CONFERENCE was held in the office of Mr. C. M. Lewis, superintendent of the Philadelphia, Reading and Pottsville Telegraph Company, at Reading, Pa., April 14, to consider the condition of the telegraph department.

CHARLES ADDISON SMITH, aged seventy-four years, for over twenty-five years chief train dispatcher of the Lake Shore and Michigan Southern Railroad Company at Air Line Junction, Toledo, Ohio, during a continued spell of ill health shot and killed himself April 16, at the home of his son Charles H. Smith in New York. Mr. Smith was well known in railroad and telegraph circles in the middle west. He had been ill for a number of years. He retired from active telegraph and railroad service about eighteen years ago since which time he has been identified with his nephew Mr. J. Hackstaff at Denver, and in Oklahoma, Okla., and Syracuse, N. Y., and for the past eight years a resident of New York City where he has been the representative of the Hugro Manufacturing Company of Chicago, makers and sellers of vacuum cleaners. Mr. Smith gained many friends among the larger wholesale houses using his goods and his passing away will be truly mourned.

Convention of Railway Telegraph Superintendents.

The Association of Railway Telegraph Superintendents will hold its next annual convention at St. Paul, Minn., June 20, with headquarters at the St. Paul Hotel. At the Rochester Convention last year it was decided to hold this convention for three days, June 20, 21 and 22, but owing to the press of business and other matters requiring the attention of the members it is likely that four days will be given over to the work.

The various special committees will make their reports and the discussions thereon will consume considerable time. It is the belief that the convention will be one of the best ever held.

Mr. E. P. Griffith, superintendent of telegraph, Erie Railroad, New York, has been made chairman of the association's special committee on "Utility of Wires," to take the place of Mr. H. D. Teed of the St. Louis and San Francisco line, who has resigned the chairmanship on account of the press of other work. Mr. C. O. Van Derwort, engineer, telegraph department, Michigan Central Railroad, has been appointed a member of the same committee. Chairman Griffith and the full membership of the committee held a meeting at Buffalo April 11 and have assured President E. C. Keenan of the association that they will deliver a good report on or about May 1.

Mr. G. O. Perkins, superintendent of telegraph of the Chicago, Great Western Railroad, Chicago, Ill., in remitting to cover his subscription for another year, writes: "I wish to advise that your thoughtfulness in renewing the subscription before sending the bill to me is surely appreciated."

BOOK FOR RAILROAD TELEGRAPHERS.—Every railroad telegrapher should improve his spare moments by increasing his information on practical railroad telegraph work. It is a pleasure to know more and to know more places one in position for advancement. An excellent book on railway telegraph practice is "Twentieth Century Manual of Railway, Commercial and Wireless Telegraphy," by Fred L. Meyer. This book is in its seventh edition and has been recently revised and enlarged. It is useful alike to dispatchers, operators, managers and officials, and is thoroughly practical in its treatment of the subject of railway telegraphy. For the practical man there is nothing so clear and complete and it is authoritative. The price of this book is \$1.00 per copy, and copies may be obtained of TELEGRAPH AND TELEPHONE AGE, 253 Broadway, New York.

MUNICIPAL ELECTRICIANS.

MR. FRANK R. WILLIAMS is superintendent of fire alarm at Elizabeth, N. J., and has been connected with the system for twenty-three years. The apparatus at headquarters is of the automatic type and the total number of boxes is 118.

REPORT OF THE RICHMOND FIRE ALARM SYSTEM.—Mr. W. H. Thompson, city electrician, Richmond, Va., in his report for 1915 states that the fire alarm system comprises: Fire alarm street stations, 198; box circuits, 14; tapper bell circuits, 4; local gong circuits, 5; gong circuits, 4; tower bell circuits, 2; telephone circuits, 40; private fire alarm stations, 100. There are also forty private fire alarm stations; thirteen miles of underground cable; three miles of overhead cable, 179 miles of overhead wire, test posts, duct, manholes, etc.

Convention of Municipal Electricians.

As already announced the next annual convention of the International Association of Municipal Electricians will be held at Baltimore, Md., August 22, 23, 24 and 25. Mr. J. B. Yeakle, superintendent of fire telegraph, Baltimore, is chairman of the local committee. Several papers of special interest will be presented and an important feature of the convention will be a visit to the National Bureau of Standards at Washington, D. C.

Mr. Clarence R. George, city electrician, Houston, Tex., is secretary of the association.

OBITUARY.

FLOYD BESS, aged thirty-five years, of the plant department of the Western Union Telegraph Company at Tucumcari, N. M., died February 18.

HENRY N. BAUER, aged forty-eight years, lately of the plant department of the American Telephone and Telegraph Company, but also well known in Postal Telegraph-Cable circles, died in St. Louis, Mo., April 7 of intestinal strangulation. Mr. Bauer, who was an associate member of the American Institute of Electrical Engineers, was the inventor of many important telegraphic and telephonic improvements. His ample store of knowledge was always at the disposal of the inquiring student and his genial, frank and benevolent nature won for him the admiration and warm friendship of his associates.

Mr. A. G. Tebbs, a Successful Contestant at The San Francisco Telegraph Tournament.

Mr. Arthur Glenn Tebbs, who won the second prize in the press sending contest at the San Francisco telegraph tournament last August is an operator in the Los Angeles, Cal., office of E. F. Hutton and Company, brokers.

Mr. Tebbs was born at Lawrenceburg, Ind., June 22, 1886, and entered the telegraph service in 1900 as a messenger at Hamilton, Ohio. In 1906, Mr. Tebbs worked the Western Union Buffalo bonus wire in Chicago. After spending a few months with the Postal Company in Cincinnati he went to Pittsburgh with the Western Union. This was in December, 1906. He remained there about three months, working the first Chicago bonus wire and later the New York bonus wire. He was subse-



A. G. TEBBS.

quently engaged in railroad work as agent, leverman and operator.

Mr. Tebbs says he did not decide to enter the tournament until the last moment, and had little time for preparation. He reached San Francisco two days before the tournament, having made up his mind to enter the press sending contest but was in doubt as to entering the championship as he was afraid of the brokerage feature of that contest, having forgotten what little he had ever known of the brokerage business. On each afternoon of the two days preceding the tournament he visited the San Francisco office of E. F. Hutton and Company for ten or fifteen minutes, trying to get a line on what would be handled in the brokerage part of the contest.

At the time of the tournament Mr. Tebbs was working for the International News Service at Los Angeles. He considers the Chicago to Los Angeles and San Francisco leased wire of the International News Service to be one of the, if not the fastest and heaviest press wires in the country. He worked the receiving end of this wire in Los Angeles for a year before entering the tournament. After the tournament he left the International News Service and took a position with E. F. Hutton and Company in Los Angeles, which position he still retains.

Two of the judges later told Mr. Tebbs that he and Mr. H. C. Emrich had made a close race for second prize in the championship contest, which was won by Mr. Emrich. "I am sure," says Mr. Tebbs, "the better man of the two got the second prize." Several prominent telegraph people complimented Mr. Tebbs on the quality of his Morse. Four dictaphone records were made of Mr. Tebbs' sending and he now has them in his possession.

In the press sending contest in which he captured the second prize Mr. Tebbs sent 1,500 words in 28 minutes, 50 seconds and his time in the all around championship contest, sending, was 40 minutes, 55 seconds, the matter being the same as that sent by all of the other contestants.

ECHOES OF THE SAN FRANCISCO TOURNAMENT.—Mr. E. Cox, chief operator for the Postal Telegraph-Cable Company at San Francisco, Cal., who organized and conducted the International Telegraph tournament in that city last August, has been congratulated by some of the participants in the contests and others interested in the affair. Among the writers of these congratulatory letters were Mr. R. H. Redmond, winner of two second prizes, and Mr. E. H. Piersen, president of the Piersen Telegraph Transmitter Company. These gentlemen praised Mr. Cox for the able manner in which he carried out the work of the tournament and for his fairness in handling the many difficult problems which naturally arose in connection with the undertaking.

New Book.

Elementary Lessons in Electricity and Magnetism, by Silvanus P. Thompson, is one of the best known hand-books on electricity. It has gone through several editions, the latest bringing it up to date. Many telegraph engineers have received a greater insight into the theory of electricity by the study of this book than by any other means, and a copy of it should be in the possession of every student.

This book covers the entire domain of electricity comprehensively, and is altogether an excellent book of reference. It has 706 pages and 377 illustrations, all prepared for this work. Prof. Thompson has introduced a chapter on wireless telegraphy and wireless telephony. While it is brief, it emphasizes the principles in a very clear manner.

The scope of the work is indicated in the titles of the seventeen chapters, as follows: Frictional electricity; magnetism; current electricity; electrostatics; electromagnetics; measurement of current, etc.; electric production of heat; electric light; inductance; dynamos, alternators and transformers; transmission and distribution of power; electric traction; electrochemistry; telegraphy and telephony; electric waves; wireless telegraphy; electron theory of electricity.

The price of this book is \$2.00 per copy, and copies may be obtained of TELEGRAPH AND TELEPHONE AGE, 253 Broadway, New York.

Answers to Questions.

(44) Q.—Will you kindly explain the chemical actions that take place in a Daniell cell, and oblige a student? J. M. C.

A.—In the Daniell cell zinc is dissolved at one pole to form zinc sulphate, the chemical action setting up a + electromotive-force, while at the other pole copper is deposited by the current out of a solution of copper sulphate, thereby setting up an opposing (or —) electromotive-force. The electromotive-force due to zinc is shown to be +2.364 volts; that to deposited copper to be —1.249. Hence the net electromotive-force of the cell is (neglecting the slight electromotive-force where the two solutions touch) $2.364 - 1.249 = 1.115$ volts. This is nearly what is found in practice to be the case. It is less than will suffice to electrolyze water, though two Daniell cells in series electrolyze water easily.

(45) Q.—In the various articles that I have read on ground resistance the question has arisen in my mind as to whether the earth itself has any resistance; also, is there any difference in the resistance of frozen soil and soil not frozen? Can you enlighten me on these points and oblige? R. C. S.

A.—(1) It is generally conceded that the earth has no resistance except the contact resistance which is generally taken as the resistance between the ground element and the earth directly surrounding the ground element.

(2) Yes; frozen soil has greater resistance than soil not frozen.

(46) Q.—I have seen articles in the technical papers, especially foreign papers, about telephoning over long submarine cables. Can you tell me how far submarine cable telephony has been carried out in practice, and what has been done in this country in that direction? C. P.

A.—Several special submarine telephone cables have been laid abroad running up to seventy-five miles in length. From time to time claims are made in the newspapers of the results said to have been obtained over several hundred miles, but these results are usually not supported by technical data or otherwise confirmed so as to justify our telephone companies accepting them. On account of the fact that this country is not broken up by large bodies of water, it has not been found necessary to employ long submarine cables in establishing telephone communication within the United States. As part of the Bell system, there is a cable between Victoria and Vancouver, B. C., 32.6 miles long which was laid in 1912. This cable is used continuously for telephone working in connection with long land lines.

QUESTIONS AND ANSWERS IN TELEGRAPHY AND TELEPHONY.—Messrs. S. Rentell and Company, London, England, have published in booklet form the questions and solutions in telegraphy and telephony set by the City and Guilds of London Institute in the final examinations of telegraphy and telephony for the ten years 1906-1915. The matter was compiled by Mr. H. P. Few. The price of this book is seventy-five cents and copies may be obtained of TELEGRAPH AND TELEPHONE AGE, 253 Broadway, New York.

Business Opportunities.

The saying that there is nothing new under the sun is far from being true. Every day the daily papers tell us of some needed invention, and several times lately we have read of railroad collisions. Did the inventor ever stop to think that this is an opportunity for him to prevent collisions? Hundreds of inventors are devoting their time and efforts to the solution of this problem, but most of them are trying to do it electrically. That is all wrong. Inventions in the mechanical line in our opinion should be made to notify the engineer of an approaching train of danger ahead.

It seems to us that those of an inventive turn of mind should study this question from a different angle now that electricity has failed, up to the present time, to solve the problem. We would suggest that inventors avail themselves of the air pressure which is found under every car, to sound a warning to approaching trains by means of sirens or air whistles. A siren could also be placed on the cab of the locomotive. The sound no doubt could be heard very distinctly for a distance of over half a mile. If the siren or howler were placed on the rear end of the last coach of a passenger train the conductor, after he had sent out the brakeman to flag an approaching train, could manipulate the siren and every passenger on the train would know that precautions were being taken to insure safety. The passengers on the approaching train hearing the sound of the siren would also know what it meant and would see to it that the conductor and train crew did their duty. So long as the human element enters into the question of running trains on signals or otherwise, the element of danger will be ever present. The suggestion made here involves little expense and the device would no doubt protect a passenger train brought to a full stop as well as an approaching passenger train. Here is an opportunity for the inventor to devise a method of preventing rear-end collisions.

ADDING MACHINES.—One of the most useful labor-saving devices for offices is the adding machine, and it finds a very important place in telegraph offices. It adds figures quickly and accurately and saves much time and labor. Everyone connected with the commercial department of the telegraph has more or less adding to do every day and work of this character is very exhausting. When a person becomes tired the work of adding in the old way becomes very uncertain in its results, but with the use of an adding machine there is no brain fag and the machine never gets tired. The "Golden Gem" is a portable adding machine, and besides adding it multiplies and subtracts. It is made by the Automatic Adding Machine Company, 148 Duane Street, New York.

ALASKA TARIFF BOOK.—The War Department, through the office of the chief signal officer at Washington, D. C., has issued a tariff book covering the Washington-Alaska military cable and telegraph system. The book is dated February 1 and is complete up to that time.

Old Timers and Military Telegraphers

A meeting of the officers, members of the Executive Committee, and chairmen of the various local committees selected for the reunion of the Old-Time Telegraphers, to be held in New York September 26, 27 and 28, took place Wednesday afternoon, April 19. The chairmen of the various committees are: General Committee on Arrangements, Chas. P. Bruch; Committee on Finance, W. H. Baker; Lewis Dresdner, treasurer; committee on Entertainment, Thos. E. Fleming; Committee on Reception, Gardner Irving; Ladies' Committee on Reception, Mrs. Jas. R. Beard; Committee on Banquet, E. J. Nally; Committee on Hotels, P. J. Casey; Committee on Registration, Richard J. Murphy; Committee on Press and Printing, J. B. Taltavall. Mr. F. J. Scherrer is secretary of the association.

The Society of the United States Military Telegraph Corps will also hold its annual reunion at the same time and place in conjunction with the Old-Timers. Mr. David Homer Bates, 658 Broadway, New York, is secretary of the U. S. Military Telegraph Corps.

How to Buy Telegraph and Telephone Stocks.

This publication is prepared to purchase for its friends one or more shares of Western Union, Mackay, Marconi or any other stocks, either outright or on the installment plan. Remit \$10.00 per share as the initial payment if purchase is to be made on the installment plan. The stock will then be purchased at the market price and the balance due on the stock can be paid off at the rate of \$5.00 per month or in any other sum to suit the convenience of purchaser. In the meantime 6 per cent interest will be charged for the balance due on the stock. The purchaser, however, will have the benefit of the dividends, which, in many cases, will more than pay the interest charges. As soon as the stock is paid for, it will be registered in the purchaser's name and delivered to him. The commission charge on the purchase of stock is \$1.00 on transactions covering from one to eight shares. For eight or more shares the commission charge is 12½ cents per share. In remitting to cover purchases of stock, name the price at which purchases are to be made.

SUPPLYING THE WORLD WITH NEWS.—An interesting and instructive address on the origin and the work of The Associated Press was delivered before the Franklin Institute, Philadelphia, January 19, by Mr. Melville E. Stone, general manager of The Associated Press, New York. It is printed in full in the April number of the *Journal of the Franklin Institute*.

THE TELEGRAPH AND TELEPHONE LIFE INSURANCE ASSOCIATION has levied assessment 602 to meet the claims arising from the deaths of J. Christie at Philadelphia, Pa., W. S. Sullivan at Chicago, Ill., E. R. Fisher at San Francisco, Cal., B. Brooks at New York, Ella M. Carey at Brooklyn, N. Y., W. G. Hudson at Rural Retreat, Va., J. F. Schroeder at Toledo, Ohio, P. E. Dumont at Newark, N. J.

Of Interest to Operators.

Many operators throughout the country who have some spare time that they would like to employ profitably will find it to their advantage to look into the merits of the violet-ray high-frequency generator which is designed for the invigoration and stimulation of the nerves and body in general. It has been tested practically for several years and found to be a very efficacious apparatus. It is not a toy but is reliable and of real value. Telegraphers who care to look into it can obtain all the particulars by addressing the manufacturer, The Rogers Electric Laboratories Company, 2056 East Fourth Street, Cleveland, Ohio. Their advertisement appears on another page of this issue.

LETTERS FROM OUR AGENTS.

We invite our readers to send in brief items of interest to telegraph, telephone, cable and radio work.

NEW YORK POSTAL.

Appointments to the operating force include L. L. McKenna, R. L. Carman, S. C. Sprong, H. I. Olmstead, T. Fulton, J. Fulton, H. B. Lasher, J. H. Cobb, J. F. Bird, H. J. Foley, E. J. Cogan, R. A. English, M. J. Gaffney, R. P. Meissner, W. V. Bethel and J. S. Hughes. Among those who resigned are F. O. Paschall, W. J. Short, J. B. Greener and I. Ehrenreich.

An addition to the bulletin board greatly increases the facilities for displaying operators' records and official notices of all descriptions. It is interesting to note the large number of "clear" records shown in the monthly lists posted.

Assistant chief operator, Charles P. West, of the quad department, has gone to Virginia for a short vacation.

Miss Murphy, timekeeper for this company at the main office in Philadelphia, was a recent visitor, accompanied by her friend, Miss Eddy, of the same city. Mr. D. E. Byerley, of the Elyria Electric Company, Elyria, Ohio, recently called to see his friend, Ralph Carr, our loop chief and incidentally looked us over.

Assistant chief operator, Rex G. Post, has assumed the supervision of western traffic in the division formerly looked after by Mr. M. D. St. John. The latter goes to the quad department, vice Mr. Post.

Operator Charles St. Pierre of the western division, a well-known telegrapher of this city, announces his engagement to Miss Frances Doyle, also of New York.

NEW YORK WESTERN UNION.

Southern chivalry, hospitality and courtesy could not have been better exemplified than when two of our prominent members of the official force of this office, both hailing from the state of Georgia, recently fell and broke their collar-bones. After it was announced that one of the gentlemen had met with this misfortune the other courteous telegrapher very promptly stepped on a piece of ice

and suffered a similar mishap. This was an act of courtesy that could not have possibly been duplicated by any other two men hailing from any other place than Augusta, Ga.

"Plattsburgh and Preparedness" just now appears to be the slogan at 24 Walker Street, judging from the interest displayed in the recent bulletin from the military training camps association. We can expect to have quite a few lieutenants and captains, etc., in our midst before the summer is over. The period of training is one month. The Western Union will grant any of the employees who avail themselves of this opportunity leave of absence with pay. Full particulars may be had by applying to The Officer in Charge, Military Training Camps, Governor's Island, N. Y.

Mr. S. B. Haig, division traffic superintendent, has just returned from a trip to Washington, Baltimore, Philadelphia, Boston and New England points. He made a record jump from Boston to Washington on the evening of April 19, the day before the president read his message to Congress. The Washington office is doing a record business as a result of the present political situation. An additional force has been sent to Washington from New York, Philadelphia, Baltimore and Richmond, to help out during the rush.

Tests are being made in this office as well as in other large cities with the diaphragm telegraph sounder in connection with the dictaphone. The sounder is placed in the large end of a horn and the signals are conveyed through a connecting tube to the dictaphone upon the cylinder of which a record is made of the signals. This is for the purpose of monitoring the work of the operators. By this method of recording the operator himself can note any faults of imperfect combinations there may be in his work. The insertion of the dictaphone in the circuit is made without the knowledge of the operator.

Mr. J. P. McGovern, manager of the 149th Street and Bergen Avenue branch office, is justly proud of the fact that one of his messengers, Charles Glaeser, was recently presented with a hero medal by the Ralston Purina Hero Fund of St. Louis, Mo., for having saved the life of a little boy whose clothing had accidentally caught fire. The messenger smothered the flames and then carried the boy to the nearest hospital.

Within the past thirty days multiplex installations have displaced other types of printers between New York and Washington, New York and Philadelphia and New York and Baltimore.

Mr. A. M. Lewis, assistant chief operator of the Eastern Division, has returned to duty after an absence of eight weeks caused by illness.

Col. William B. Wilson, president of the Society of the United States Military Telegraph Corps, Philadelphia, Pa., author of two military books relating to civil war times, has sent copies of his books to the Western Union Educational Society for its library. The titles are "Acts and Actors in the Civil War," and "Robert Pitcairn." These books will interest telegraphers of the present gen-

eration. Col. Wilson, who is now seventy-seven years of age and resides at Holmesburg, near Philadelphia, writes in the beautiful penmanship peculiar to former telegraphers his appreciation of the educational efforts now carried on by the Western Union Telegraph Company for the benefit of its employees.

On Wednesday evening, April 5, a number of our young ladies gave a surprise to Miss Ethyl McCarthy, who was recently transferred to the office of General Superintendent of Plant G. M. Yorke. All present spent a very enjoyable evening, Miss McCarthy proving herself to be quite a hostess.

Mr. N. C. Pastrof has been appointed manager at Montclair, N. J., vice Miss H. B. Dysart.

Returned from vacations: Frank D. Murphy, J. A. Hickey, chief of force, multiplex department; E. J. Liston, senior supervisor trunk division.

J. J. Reilly, tube supervisor, is the proud father of a daughter. Mrs. Reilly was formerly Miss Elizabeth Barry of the telephone department.

Miss Margaret Carey resigned April 15 to be married.

Miss N. Murray has been appointed supervisor of the Baltimore multiplex circuit.

Among recent appointments to the operating force are Mr. F. P. Moseley, Charlotte, N. C.; Mr. M. K. Rauch, Detroit, and Mr. F. O. Paschall, New York.

The Western Union class in personal efficiency met Thursday, April 20. A second class is being formed for the accommodation of our night men, who are unable to attend the day class. The members of both classes are showing a keen interest in the subject, and are all working hard to get new members.

Among recent deaths are the following:

Mrs. Barton, wife of O. Edwin Barton of the bookkeeping department, died April 8. Mr. and Mrs. Barton were married only about a month; J. V. Currie, suddenly, April 14; H. R. Vanwagenen, of the plant department, April 16. Mr. Vanwagenen had been ailing for some time past.

The father of operator D. B. Grosso of this office died recently. Mr. Grosso has returned to duty after settling his father's estate.

CHICAGO POSTAL.

Mr. H. F. Jones of the Stock Yards office has, with his brothers, embarked in the automobile trade at Crawfordsville, Ind., where he has already built up an excellent business. The Jones Brothers besides being good telegraph operators are first-class mechanics which is a splendid trade combination.

PHILADELPHIA POSTAL.

Mr. C. C. Adams, vice-president, New York, was a recent visitor. He had a hearty handshake for those he knew and a pleasant greeting for those whom he had not met before. Another visitor was R. J. Kessee, chief service clerk, Washington, D. C.

An additional panel switchboard has been installed to take care of the increasing "protective system" business.

Wm. F. Murray has been transferred to Atlantic City as night manager. Harry Riskie succeeds Mr. Murray on the first Pittsburgh bonus circuit.

The Postal Athletic Association will hold its meet and outing June 24 at Woodside Park. In addition to sport events for everybody some novel feature surprises are planned. Edward M. Price is chairman, David Logan, secretary, E. W. Miller, treasurer.

Station linemen in the Philadelphia district have completed spring trimming and putting lines in first-class order.

Barney Kayser has resigned to enter the butter and egg business.

Hugh McGonigle, formerly at the *Public Ledger*, has resigned.

Samuel Rosenfeld has been added to the main office operating force.

J. W. Dyer, one of the oldest employes in our service, is still on the sick list. Mr. Dyer was for a number of years manager of the Philadelphia office.

Our office was well represented at the dinner and dance given by the Electrical Aid Society on April 27 at Mercantile Hall.

Philadelphia officials are proud of the consistent good records of Philadelphia operators for the quarter-year, January, February and March, which have just been announced. Two-thirds of the operators have perfect records, being involved in no errors. The total number of errors for the quarter was 32 per cent. less than that of any quarter last year. Wm. G. Kurtz heads the list in the piece-work class, while Harry Riskie leads the non-piece work operators. Viola M. Hetzel is at the top in the list of women Morse operators, with Olga Falcon first of the printer operators.

Postal messengers stationed in the downtown business district were the guests of the Philadelphia Produce Merchants' Boosters Club at a special performance of "It Pays to Advertise." The messengers were all uniformed and took a lively part in the jollity that occurred between the acts.

Mr. E. M. Carpenter, operator in the main office, recently lost his father by death.

ST. LOUIS WESTERN UNION.

Mr. C. E. Dubbs, manager of the Commercial News Department, has been transferred to a better position in the local commercial department. Mr. J. A. Bolato, supervisor in the automatic department, succeeds Mr. Dubbs.

Rubber Telegraph Key Knobs.

No operator who has had to use a hard key knob continuously should fail to possess one of these flexible rubber key caps, which fits snugly over the hard rubber key knob, forming an air cushion. They render the touch smooth and the manipulation of the key much easier. Price, fifteen cents. J. B. Taltavall, TELEGRAPH AND TELEPHONE AGE, 253 Broadway, New York.

Mr. W. E. Bellman, of traffic headquarters, New York, was a recent visitor. He was here several days testing the multiplex equipment.

SAN FRANCISCO WESTERN UNION.

A pleasant farewell dinner party was tendered to Mrs. Norman Trippe (nee Stone), this week on the occasion of her departure for her New York home. The guests were the Misses Brandt, Brennan, Connelly and Wexall, and Mrs. Giestlich and Mrs. Balliett, all of whom will be remembered as the Wheatstone force of bygone years. Mrs. Trippe and daughter came to see the close of the Panama Pacific Exposition and found it hard to leave their many friends.

Mr. L. S. Blackman, for some time on division valuation work, left last week to accept an attractive position under the Interstate Commerce Commission at Washington. He is accompanied by his bride of a month.

Mr. R. L. Bailey has been installing the Morkrum system for the Southern Pacific and the system is now operating satisfactorily between San Francisco and Los Angeles.

Mr. H. H. Fisher is spending his vacation in Denver and vicinity.

Mr. M. L. Lamb has just returned from an enjoyable trip to Lassen County.

HELENA, MONT., WESTERN UNION.

Recent arrivals: A. E. Carey, Miles City, Mont., and H. J. Maye, Wallace, Idaho.

Printer mechanic, T. F. Barnett spent his vacation on the coast studying the multiplex. T. P. Dudley, of Denver, relieved Mr. Barnett.

Mr. G. O. Mc Nerney spent his vacation on his homestead near the city.

Operator G. L. Taylor is recovering from an operation following an acute attack of appendicitis.

Operator E. S. Peterson underwent an operation at a local hospital recently in an attempt to check Potts disease of the spine. The operation involved grafting a piece of shin bone in the spinal column. Mr. Peterson is doing well at present.

32d YEAR

Serial Building Loan and Savings Institution

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Vice-President, Thomas M. Brennan
Secretary, - - - Edwin F. Howell

Resources - - - \$950,000
Surplus - - - 35,000

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Every wage earner should save some portion of his or her earnings, otherwise nothing will be accumulated to care for the future. **Resolve to make a beginning.**

Western Union Building, 16 Dey Street, 9 a. m. to 5 p. m.
Postal Building, 253 Broadway, Room 1030, 2.30 to 4.30 p. m.,
Fridays, and each 15th and last day of month.
Telephone Building, 24 Walker Street, Room 1129, Daily
9 a. m. to 2 p. m.

Saturdays 1 p. m.

ASSOCIATIONS AND ORGANIZATIONS.

The Old Time Telegraphers and Historical Association, Andrew Carnegie, president; F. J. Scherrer, secretary, 30 Church St., New York. All Old Time Telegraphers who are eligible for membership are requested to send for application blanks. The next reunion will take place in New York City, September 26, 27 and 28.

Association of Railway Telegraph Superintendents, E. C. Keenan, president; P. W. Drew, 112 West Adams Street, Chicago, secretary and treasurer. Annual meeting St. Paul, Minn., June 20.

MORKRUM COMPANY TELEGRAPH PRINTERS

717 Railway Exchange, Chicago

Classified and Want Advertising Section

Advertisements will be accepted, for this department of the paper, at the rate of five cents per word.

Post office or express money orders, checks or drafts may be made payable to Telegraph and Telephone Age when ordering goods advertised in the classified columns. They will be endorsed and turned over to the proper party when the goods have been shipped to those ordering.

Our Subscription Department

This publication is prepared to handle subscriptions for any paper or magazine published. Our friends can hereafter look upon TELEGRAPH AND TELEPHONE AGE as a clearing-house for all journals no matter where

printed. Address and make remittances to TELEGRAPH AND TELEPHONE AGE,

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The MURRAY MULTIPLEX Watch the passing of the Morse Quad. The Multiplex has killed it, because the Mx can do far more, and is weather immune, and works till the wire breaks. There is no limp in the left leg of the MMx.

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12 Wharf Rd., City Rd., London N., England

For a limited time only, to telegraph and telephone employees, copies of American Telegraphy and Encyclopedia of the Telegraph, by Wm. Maver, Jr., can be obtained at \$2.50 each. This is a reduction from \$5.00. Address Maver, care Telegraph and Telephone Age, 253 Broadway, New York.

FOR SALE—A positive bargain, one Model 45 Weston Portable Voltmeter, 0-5, cost \$60.00, shelf-worn only, price \$20.00. Address Weston, c/o Telegraph and Telephone Age, 253 Broadway, New York.

THE AMERICAN TELEGRAPH-ER. A monthly magazine of railroad and telegraph tales. Jeff W. Hayes, editor. Price, \$1.00 per year. Address, American Telegrapher, 1822 East Morrison street, Portland, Ore.

Marshall's Electrical Condensers

FOR TELEGRAPH, TELEPHONE, ELECTRIC LIGHT,
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Sending Condensers for Wireless made to stand any voltage required. Standard Condensers a specialty. These Condensers are used in all Telegraph offices in America where Standard and ordinary Condensers are required.

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J. G. MURRAY, Esq., Electrician C. & S. A. Tel. Co., N. Y.

Address: WM. MARSHALL, 709 Lexington Ave., near 57th St., New York

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Reserve Fund, . . \$345,000

Insurance \$500—\$1000—\$1500

The Association was instituted to furnish pure life insurance to all engaged in telegraph and telephone service, to take the place of "passing around the hat" which was very expensive and besides barely provided funeral expenses.

It has paid families of deceased members \$2,000,000. You should be a member. Fill in attached coupon and mail to Secretary.

"Mr. E. F. Wach our representative at Chicago in six weeks secured seventy applications for membership and has fifty more ready to close. He expects to obtain three hundred new members during the coming year."

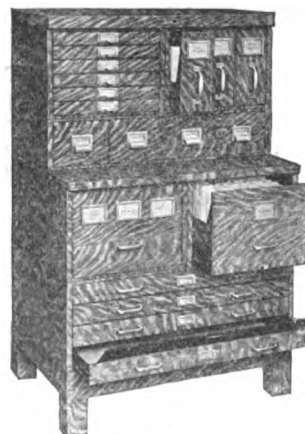
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Bound in Flexible Leather

THIS VOLUME is the finest, most complete and comprehensive book on the telegraph ever published. It is colloquial, simple and clear in style, free from technicalities, copious in the amount and diversity of practical information furnished.

**It is Splendidly Illustrated by
235 Diagrams**

NO SUCH THOROUGH TREATMENT of the subject of the telegraph, clearly explaining the equipment of a modern telegraph office, has ever before been accomplished.

IN ADDITION TO A VAST AMOUNT of other material, it contains the most valuable part of the matter pertaining to electricity, storage batteries, the duplex, the quadruplex, Wheatstone system, the principal types of repeaters and other telegraph apparatus that Mr. Jones has written during his identification with this Journal.

THIS WORK COVERS the entire field of a practical telegraph course, and the subjects are treated with a conviction and simplicity wholly free from entangling technicalities, such as to render the volume highly instructive, of delight and absorbing interest.

A STRONG AND VALUABLE FEATURE of the book lies in the diagrams, clearly drawn and of large size, which show the apparatus of the systems of both the WESTERN UNION TELEGRAPH COMPANY and of the POSTAL TELEGRAPH-CABLE COMPANY brought up to date. Each apparatus described, in addition to the theoretical illustration, is accompanied by a diagram of an "actual binding post connection," taken from the blue print, something that all linemen especially will thoroughly appreciate.

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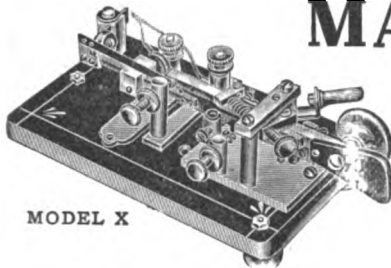
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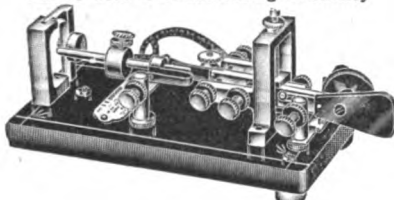
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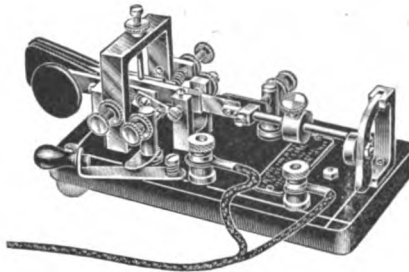
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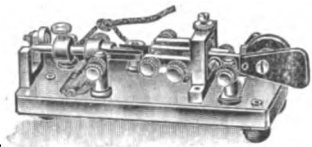
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One lever is used for making dots, and the
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A marvel of speed, smoothness of action, and ease of manipulation. Made especially to meet the demands of that large army of telegraphers who desire a small light weight, but efficient sending machine. The same sending possibilities, the same carrying qualities that characterize the work of the Famous Martin Vibroplex, together with the same strength and durability are found in the Vibroplex Number 4. Less than half the size of the larger models, and weighs but two and one-half pounds.

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PHILLIPS' CODE THOROUGHLY REVISED AND BROUGHT UP TO DATE. PRICE \$1.00

Mr. Eugene E. Bruckner, the well-known press operator now located at Chicago, Ill., has, under the authority of Walter P. Phillips and with the assistance of a number of officials and operators in the press service, thoroughly revised Phillips' Code, and the new edition was ready for delivery on June 1, 1914. Mr. Bruckner was considered by Mr. Phillips the most competent authority to undertake this important work, and so satisfactorily has the task been accomplished that the finished book has received the stamp of approval of the Associated Press, the United Press, the Publisher's Press, and all other newspaper agencies, as well as the endorsement of press operators, well qualified to judge of the merits of the new book. A large number of officials and operators in the press service were also frequently consulted on the revision.

The new book was desirable for the same reasons that makes necessary a revision of scientific text books with the progress of each decade.

Thirty years ago, when Mr. Phillips first published his work, a large number of words were used that today are almost obsolete, and several hundreds of others, not provided for then, have come into general use. Provision must therefore be made for the newer modes of expression.

As indubitable evidence of this need, men who have joined the ranks of the press associations in recent years have found themselves wholly perplexed, and have been humiliated by apparent incompetence owing to their inability readily to interpret hundreds of contractions in constant use but not honored by Phillips' Code.

The whole object of the revision has been to promote greater accuracy and reduce memorizing to a minimum. Under the new system, an operator who knows the code for *Assist* does not need to know the specific contraction for *Consist, Desist, Insist, Persist, Resist*, etc., for all are formed upon the same basis. Nor is it probable that the operator could make a mistake in their translation if, by force of sheer will power, he tried.

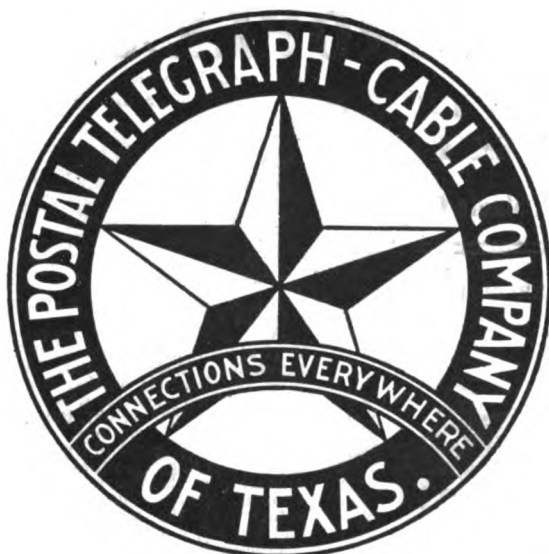
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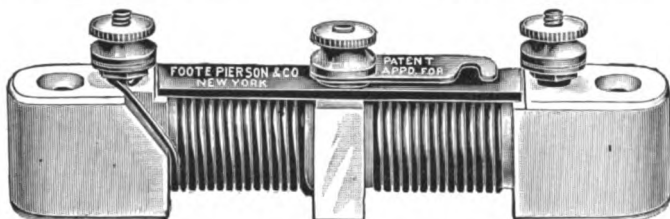
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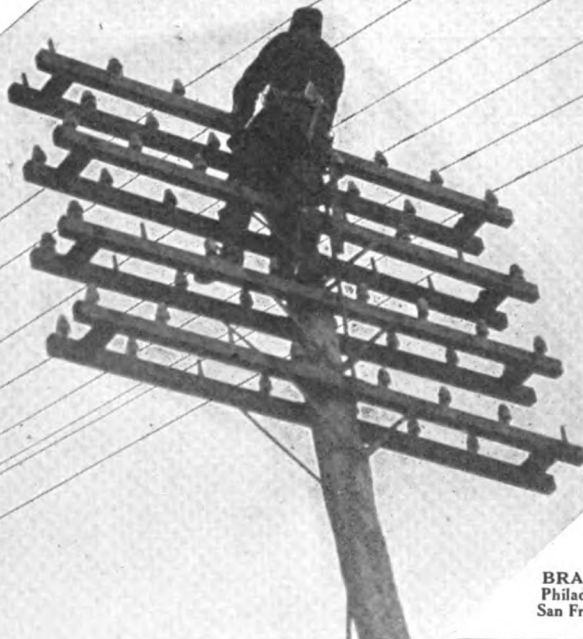
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Office of Publication: 253 BROADWAY, NEW YORK

Established 1883

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No. 10

NEW YORK, MAY 16, 1916.

Whole No. 792

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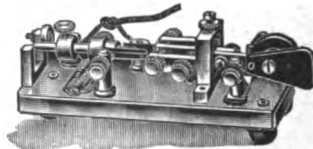
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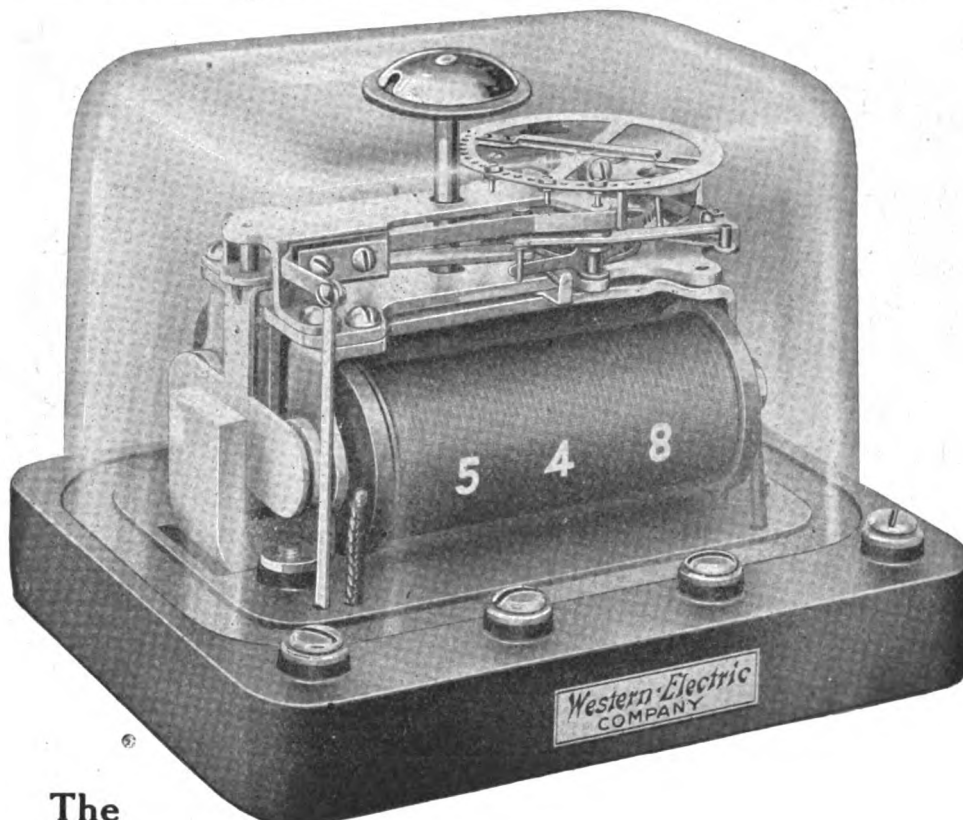
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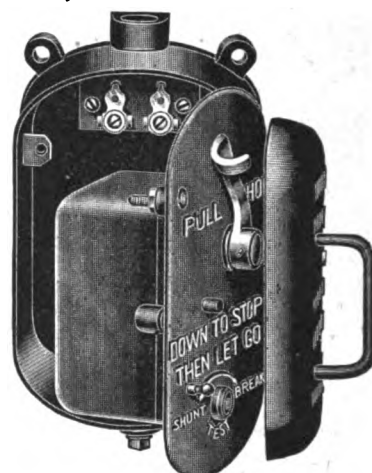


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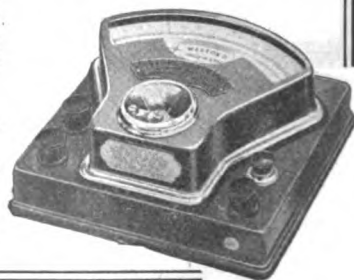
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Telegraph and Telephone Age

No. 10.

NEW YORK, MAY 16, 1916.

Thirty-fourth Year.

Telegraph and Telephone Age

Entered as second-class matter, December 27, 1909, at the Post-Office at New York, N. Y., under the Act of March 3, 1879.

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BACK NUMBERS of this journal three or more months old will be charged for at the rate of 25 cents per copy. Issues over one year old, 50 cents for one copy, but where two or more copies are purchased, the price will be 25 cents per copy.

NEW YORK, MAY 16, 1916

CONTENTS.

Prosperity of the Telegraph Companies. The Trials of Publishers.	221
Telegraph and Telephone Patents. Stock Quotations. Personal.	222
Postal Executive Office Notes. Western Union Executive Notes.	223
Dinner to Mr. Brewer. E. R. Collins, Manager, Rochester, N. Y.	224
The Cable. Cable Interruptions.	224
Canadian Notes. The Telephone. Test of Wireless Telephone	225
Communication with War Ships.	225
Radio-Telegraphy. Obituary.	226
Magnetic Club Spring Dinner.	227
Troubles of a Trouble Man. By O. C. Greene.	228
Different Methods of Producing Electricity. Early Telegraph	229
Companies. By J. C. Vail.	229
Wall Street Notes. The First Telegraph Line. Essentials of	230
Electricity.	230
The Morse Relay as a Telephone Receiver. Suits Against	231
Telegraph Companies. The American Diplomatic Code.	231
Telephone Chief Operator's and Monitor's Equipment.	232
Testing Quadruplex and Duplex Instruments. By M. M. Davis.	232
Live Timber for Poles.	233
Early Boyd Arrives. By R. M. Telschow.	234
Representative G. E. Hood, a Former Telegrapher. Associated	235
Press Operators Commended. Questions to be Answered.	235
E. Frey, Director of International Cable and Telegraph Union.	236
The Railroad. Municipal Electricians. Electrical Trades Directory.	239
Industrial—Telephone for Aeroplanes.	239
Efficiency Engineering in the Telegraph Service (Continued).	240
Old Timers and Military Telegraphers.	240
Everyone Can Remember. By J. F. Daymude. The "Erie"	241
Short Cut. By R. H. Corson. Wire Making An Old Art.	241
"Old Farmer" Lawton on the Move.	241
Letters from Our Agents.	242

Prosperity of the Telegraph Companies.

The telegraph companies have never experienced such prosperity as they enjoy at the present time, and while the stockholders are assured of adequate dividends the employees are also receiving their share of the success in the form of benefits of various kinds, and in many cases in increases of salaries.

In the recent report of the Mackay Companies, President Mackay stated that while it was entirely possible to increase the dividend on the common

shares of the company it was deemed advisable not to do so in view of the uncertainty of the future. The trustees think it better to use caution in thus ensuring a permanent fair return on the investments of the stockholders than to create a temporary enthusiasm by the distribution of extra earnings in a profitable year. This action is certainly commendable and it strengthens the economic position of the company. If, after the close of the European war, the volume of business continues as large as at present the trustees will feel justified in increasing the dividends on the common shares.

Another element of strength in the company's position is the increase in holdings of common and preferred stock of the Mackay Companies by the employes of the Commercial Cable and Postal Telegraph systems. By thus investing their savings they show their confidence in the earning power of the property and naturally learn that what is beneficial to the company's interests is proportionately beneficial to their own. The report is certainly full of hope and encouragement of the safe and sane kind.

The recognition expressed in the annual report of the Western Union Telegraph Company of the zeal and cooperative spirit of the efficient employes in aiding the company to attain success during the past five years should be highly gratifying to those concerned.

Hitherto scant attention and recognition have been given to employes for their loyalty to their employing interests, and it is therefore very pleasing to note the willingness of this company to give credit where credit is due.

The company has instituted various agencies to bring about better working conditions; sickness and accident benefits, pensions, vacations, etc., and best of all it has increased and is steadily increasing salaries on the basis of individual performance. The worthy employes have less to worry about as to their future and their minds are clearer and naturally their efficiency has increased. Therefore, taking all in all, the lot of the employe is infinitely more pleasant than it ever has been.

The spirit of organization and cooperation is indeed a vital force in the telegraph industry of today.

The Trials of Publishers.

The publishers of newspapers are confronted with a serious situation as regards the supply of printing paper. The European war has caused a great scarcity of paper in this country, and a consequent large increase in the price of this commodity, and it is becoming more and more difficult to get it at all at any price. The present price for paper is twice as much as it was six months ago, and paper dealers announce that it will continue to advance. No paper mill will contract to supply paper for longer than one month in advance on account of the increasing prices.

Not only has paper increased in price but everything else that enters into the make-up of a completed newspaper—engravings, printing, etc. Publishers simply have to submit to these growing expenses to protect the interests of their readers, but when the supply of paper is threatened the situation becomes a serious one indeed.

The burden placed upon the publishers is an extremely difficult one. Their margin of profit is becoming more and more reduced and they are compelled to give serious thought to devising ways and means to meet the situation. There is remarkable unanimity among them to avoid placing any of the burden upon their readers by increasing subscription prices and advertising rates, so about the only practical way out of the embarrassing situation is to effect economies in the supply and mechanical departments.

As we must economize in the use of paper we propose hereafter to print as few extra copies of each issue as possible, over and above the actual requirements, and we advise those who have been depending upon news stands for their copies that this source of supply will hereafter be an unreliable one. The only certain way to get the paper is to subscribe for it either through our agents or direct to the publishing office.

We regret to be compelled to place any restrictions upon our output but under the circumstances no other way out of the difficulty seems to present itself.

Telegraph and Telephone Patents.

ISSUED APRIL 18.

- 1,179,517. Telegraph Instrument. To E. L. Gilleland, Grand Forks, N. D.
- 1,179,642. Telephone Attachment. To J. F. Makowski, Berkeley, Cal.
- 1,179,700. Take-Up Device for Telephone Cords. To W. P. Cornell, Charleston, S. C.
- 1,179,741. Automatic Telephone System. To G. E. Mueller, Aurora, Ill.
- 1,179,906. Electric Signaling. To R. A. Fessenden, Brant Rock, Mass.
- 1,180,147. Combination Telephone. To R. D. Hatch, Memphis, Tenn.

ISSUED APRIL 25.

- 1,180,286. Telephone Trunking System. To E. D. Fales, La Grange, Ill.
- 1,180,293. Selective Signaling System and Apparatus Therefor. To J. A. Hult, Chicago, Ill.
- 1,180,462. Telephone Receiver. To B. D. Willis, Chicago, Ill.
- 1,180,559. Secrecy Intercommunication Telephone System. To W. P. Andrick, Jamaica, N. Y.
- 1,180,692. Telephone Drop. To C. C. Bradbury, Chicago, Ill.
- 1,180,836. Electric Telegraph Apparatus. To E. J. Galyean, Detroit, Mich.
- 1,180,843. Automatic Telephone System. To C. L. Goodrum, New York.
- 1,180,917. Thermotelephone. To O. Graetzer, Berlin-Lichterfelde, Germany.
- 1,181,093. Telephone Party-Line System. To J. Erickson, Chicago, Ill.

Stock Quotations.

Following are the New York closing quotations of telegraph and telephone stocks on May 10:

American Telephone and Telegraph Co.	128 $\frac{1}{8}$
Mackay Companies	80 — 81
Mackay Companies, preferred	67 $\frac{1}{4}$ — 68 $\frac{1}{4}$
Marconi Wireless Tel. Co. of Am. (Par value, \$5.00)	3 $\frac{1}{2}$
Western Union	91 $\frac{1}{2}$

PERSONAL.

MR. THOMAS A. LAIRD, an old time and military telegrapher of Buffalo, N. Y., was a New York visitor last week.

MR. F. L. GILMAN, assistant general superintendent, Western Electric Company, Hawthorne, Ill., has been transferred to the engineering department at New York with the title of assistant chief engineer.

DR. F. B. JEWETT, assistant chief engineer, Western Electric Company, New York, has been compelled to relinquish work on account of trouble with his eyes, and is in the hands of a specialist. He will go south to recuperate.

MR. H. O. RAWLINS, formerly manager of the Western Union Telegraph Company at Eagle Pass, Tex., is now assistant to the manager of the Eagle Pass Transfer. This concern does an extensive business in Mexico.

MR. J. B. VAN DEUSEN, a former telegrapher, has been appointed business manager of the Sun News Service, New York. He has had a wide experience as an operator and with newspaper work. He was formerly manager at Saratoga Springs, N. Y., for the Postal Telegraph-Cable Company and afterward had charge of the press service for the same company at the Capitol in Albany. In 1901-1903 he was in the brokerage business as operator. Later he became a reporter on the *Sun* and a writer of ability. He is the author of a work on "Percentage Bookmaking." Aside from originating the system of telegraph and cable accounting of the Sun News Service he established the present routing and mileage for its leased wire system.

MRS. HANNAH M. O'LEARY, wife of Mr. M. J. O'Leary, secretary of the Telegraph and Telephone Life Insurance Association, New York, died at her home in Brooklyn, N. Y., May 4. She was well known to the fraternity at large through her attendance at the reunions of the Old Time Telegraphers and Historical Association as well as the annual gatherings of the Association of Railway Telegraph Superintendents and the International Association of Municipal Electricians. Mrs. O'Leary was a lovable and fine character. She will long be remembered on account of her charity to the needy. The Western Union officials and employees as well as the Postal employees testified to the high esteem in which Mrs. O'Leary was held, by contributing many floral offerings of beautiful design.

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POSTAL TELEGRAPH-CABLE CO.

EXECUTIVE OFFICES.

Military Training for Operators.

The Postal Telegraph-Cable Company recently received a request to allow its name to be added to the list of corporations who were willing to grant a month's leave of absence to such of its employees as cared to attend the various training camps throughout the country, those attending having to pay \$30 camp expense and buy their own outfit. In reply to this request president Clarence H. Mackay says, in a letter to Mr. W. W. Hoffman, who has in charge the recruiting for the Plattsburg camp:

"It may not have occurred to you that telegraph operators are needed in time of war far more as telegraph operators than as soldiers or officers. The attendance of these operators at the camp at Plattsburg would not aid the nation anywhere near so much as to have them available for telegraph purposes in case of war. You may rely upon it that the Postal Telegraph-Cable Company will be first and foremost in turning over to the nation not only its telegraph plant, but also its telegraph employes, organization and staff in case of the outbreak of war. * * *

"Hence, it would seem to me to be a mistake from a national point of view for a telegraph company to have its operators prepare for and enlist in the regular army instead of serving their country in the capacity for which they are peculiarly fitted, namely, telegraph service."

MR. W. I. CAPEN, vice-president, left New York last week on a business trip to New Mexico and Texas, stopping at intermediate points.

MR. W. C. DAVIET, superintendent, Louisville, Ky., was elected president of the Louisville Rotary Club at the annual election held in that city May 4. The vote was two to one for Mr. Daviet, indicating his popularity.

MR. WILLIAM LYLE, manager at Natchez, Miss., has been appointed to the board of trustees of the Natchez Hospital by Governor Bilbo, and at the first meeting of the board, held May 5, Mr. Lyle was elected secretary and treasurer of the board. Mr. Lyle is one of Natchez' leading citizens.

MR. E. CLYDE COOKSEY, manager at Roanoke, Va., has been elected a member of the board of park commissioners of that city. He was selected from several possible candidates and his election was unanimous. Mr. Cooksey is the youngest member of the board.

MR. E. L. FLANAGAN has been transferred from the main office at 253 Broadway, New York, to Lake Placid, N. Y., as manager, to succeed C. A. Lydamore, resigned.

MR. M. L. COE, manager of the Postal Telegraph-Cable Company's Geneva, N. Y., office for the past twenty years, has resigned to engage in farming.

MANAGERS APPOINTED.—K. A. Wilson at Sharon, Pa.; T. Hetzler, Sidney, Ohio; George D. Baughman, Newark, Ohio; J. O. Montgomery, Dunkirk, N. Y.; F. L. Pendleton, De Land Fla.; M. Strout, Amesbury, Mass.; G. H. Greenwood, Taunton,

Mass.; Lloyd O. Birchard, Cambridge Springs, Pa.; D. J. McCloskey, West Chester, Pa.; H. H. Clark, Springfield, Ill., (promoted from manager at Decatur, Ill.); V. J. Beurer, Decatur, Ill.; A. B. Nebelsick, Joliet, Ill.; William Flynn, Hannibal, Mo.; Miss J. Delong, Reed City, Mich.; C. E. Richardson, Barstow, Cal.; T. T. Davis, Rocky Ford, Col.; O. S. Shoemaker, Kendallville, Ind.

MR. J. S. STRICKLER, Fargo, N. D., has resigned his position as manager of the North American Telegraph Company to go on the road. His home address is now Leola, Pa.

"THE MAKING OF A TELEGRAPH BOY," is the title of an interesting illustrated article in the May number of *Popular Science Monthly*. It is an account of how the Postal company cares for its messenger boys, through Mr. M. F. Geigle, manager of the messenger department.

Mr. Edward Reynolds, vice-president and general manager of the Postal Telegraph-Cable Company, New York, in remitting to cover a renewal of his subscription, writes: "I enclose herewith my check for renewal of subscription to the TELEGRAPH AND TELEPHONE AGE, and at the same time wish to express my appreciation for the many courtesies shown us during the past year, and to say that personally I find the AGE a very valuable and interesting journal."

WESTERN UNION TELEGRAPH CO.

EXECUTIVE OFFICES.

Dinner to Mr. Brewer.

A complimentary dinner was given to Mr. A. R. Brewer, retiring vice-president, by the officers and heads of departments at the suggestion of President Newcomb Carlton, at the New York Yacht Club, Monday evening, May 1.

Mr. Carlton presented Mr. Brewer with a set of resolutions adopted by the board of directors and an original poem by Mr. Carleton Sprague, assistant secretary of the company, was read. The resolutions were in engrossed form. Addresses were made by Messrs. Rush Taggart and George H. Fearons. Mr. Brewer made suitable acknowledgments and replies.

Those present were: A. R. Brewer, Newcomb Carlton, G. W. E. Atkins, Rush Taggart, J. C. Willever, G. M. Yorke, W. N. Fashbaugh, E. Y. Gallaher, Lewis Dresdner, Wm. H. Baker, L. McKisick, A. T. Benedict, F. R. Stark, H. W. Ladd, Carleton Sprague, Geo. H. Fearons, F. D. Giles, Wm. Holmes, A. G. Saylor, F. T. Albert, J. W. Connolly, F. W. Lienau, F. J. McLain, R. E. Chetwood, W. W. Ryder, and W. L. Jacoby.

E. R. Collins, Manager, Rochester N. Y.

Mr. E. Ross Collins, the newly appointed manager of the Rochester, N. Y., office of this company, was born at Terra Alta, W. Va., July 12, 1875, and entered the telegraph service at Uniontown, Pa., in October, 1893. He was bookkeeper and operator for the West Virginia Hardwood Lumber Company of Uniontown in 1895. He entered the commercial

telegraph service, and was manager for the Western Union at Monongahela City, Pa., from 1896 to 1899, and manager for the Postal Company at Zanesville, Ohio, from 1900 to the close of 1901. Between 1902 and 1905 Mr. Collins was manager for the Western Union at Parkersburg, W. Va., and was transferred to Erie, Pa., as manager for the same interests in October, 1905. He was appointed manager at Pittsburg, Pa., July, 1909, in which capacity he served the Western Union until made district manager for West Virginia with headquarters at Charleston in July, 1911. He was transferred to Syracuse, N. Y., as manager, July, 1914, and received his present appointment on April 1, 1916.

MR. S. H. STRUDWICK of the North Sydney, C. B., N. S., cable station, is visiting friends in New York. Mr. Strudwick is well known to the fraternity of the entire country. He is one of the original three Wheatstone experts sent out from England in 1882 to instal that system on the Western Union Telegraph Company's lines in this country. His companions were William Finn and S. P. Frier, both of New York. Mr. Strudwick installed the Wheatstone system all over the country.

MR. CHARLES F. ANNETT, for the past eight years located at Jerome, Idaho, has been appointed manager of the Richmond, Cal., office of this company. Mr. Annett is well known to the telegraph fraternity of the entire country.

MR. GEORGE L. ROSS, former district superintendent of the National District Telegraph Company, Buffalo, N. Y., will enter other business in Kansas City, Mo. Mr. Ross's resignation was noted in our May 1 issue.

TELEGRAPH SERVICE LUNCHEON was served at a gathering of Western Union officials and employes at Savannah, Ga., May 2. The bill of fare was printed on day letter and night letter blanks.

CONFERENCE IN HALIFAX.—A conference of managers and cashiers of the sixth district was held in Halifax, N. S., April 12, manager C. Laidlaw of the Halifax office acting as chairman. Those in attendance were: John Simmonds, New York; C. W. McKee, S. C. Matthews, H. C. Farmer, C. A. McKee, F. Green, G. M. Robertson, H. Flaherty and Miss K. J. Amos, St. John, N. B.; R. E. Hyslop, St. Stephen, N. B.; Ivan Rivers, Andover, N. B.; J. R. Burns, Moncton, N. B.; Mrs. M. MacDonald, Sackville, N. B.; G. Laidlaw, P. Purcell, Miss Irene MacDonald, G. L. Adamore, W. J. Brown and A. J. Coppin, Halifax, N. S.; Miss C. Cole, Amherst, N. S.; Miss Claire Barry, Pictou, N. S.; Miss E. B. MacPhie, Antigonish, N. S.; Miss B. L. Grant, New Glasgow, N. S.; Miss J. M. Bond, Lunenburg, N. S.; Miss M. MacDonald, Annapolis, N. S.; Miss H. E. Woodworth, Weymouth, N. S.; O. M. Shankel, Liverpool, N. S.; J. A. Magee, Sydney, N. S.; A. E. Morrison, Charlottetown, P. E. I.

KANSAS SCHOOL OF INSTRUCTION.—The managers and assistant managers of the larger cities in Kansas and Nebraska, attended a school of instruction at Wichita, Kan., April 20, and the next day

the managers of the smaller towns attended a similar meeting. Among those present were: C. B. Horton, J. R. Hyland, B. R. Cunningham, Omaha; J. B. Pemberton, G. M. Horton, Lincoln; B. E. Mount, Grand Island; J. Synovec, Fremont, Neb.; E. J. Sullivan, D. Harrison, Wichita; B. Pearl, Salina; C. H. Prary, Hutchinson; P. P. Hughes, Atchison; C. M. Fariss, Leavenworth; J. E. Romer, Emporia; W. E. Fountaine, Independence; Phil Fitzgerald, Dodge City, and J. Thompson, Topeka, Kan.

THE CABLE.

CABLEGRAMS IN CODE TO PORTUGAL.—The British censorship announces that under the same terms the codes already authorized may now be used to and from Portugal.

IMPROVING SUBMARINE CABLE WORKING.—Recent experiments to improve the working of submarine cables include attempts to increase the speed of the cables. These efforts have lately proven successful and we understand a much greater speed is now obtained over some of the Atlantic cables. As soon as the improvements have been thoroughly protected by letters patent, a description of them will appear in these columns.

ATLANTIC CABLES AND THE IRISH REBELLION.—During the several days that the Dublin, Ireland, post and telegraph office was in the hands of the revolutionists wire communication was destroyed, and many of the Atlantic cables landing on the west coast of Ireland were deprived of their land line connections through Ireland, connecting with the channel cables from the east coast of Ireland to England. Consequently several trans-Atlantic cables were idle and only those cables having entirely submarine connection with England could be employed to deal with the enormously increased traffic.

STUDENT'S GUIDE TO SUBMARINE CABLE TESTING, by H. K. C. Fisher and J. C. H. Darby, fifth edition, is the most recent book on submarine cable testing published. It is very complete and covers simple testing, measurement of copper resistance, capacity and its measurement, tests for breaks, the earth overlap, measurement of the resistance of an earth and many other subjects pertaining to submarine cable work. A valuable feature of the book is a list of questions and answers, and many diagrams of connections of apparatus. Price \$3.50 per copy. For sale by TELEGRAPH AND TELEPHONE AGE, 253 Broadway, New York.

Cable Interruptions.

Interruptions to submarine telegraph cables are reported to May 10 as follows:

Azores and Emden (two cables), August 5; Shanghai and Tsingtau, and Tsingtau and Cheefoo, August 24; Sweden and Germany, September 30; Almeria and Melilla, October 1; Penogomera and Alhucempas (defective cable), October 1; Yap and Menado (offices closed) October 7; Obok and Djibouti, November 6; Constantinople and Tenedos, November 6, 1914.

CANADIAN NOTES.

PREMIUM WIRES.—Every wire in the Toronto office of the Great North Western Telegraph Company has been put on a premium basis.

THE NEW TELEPHONE DEPARTMENT in the Toronto office of the Great North Western Telegraph Company was put into service April 20.

MESSENGERS ENLISTED.—During the past three months forty-six messenger boys of the Great North Western Telegraph Company at Vancouver, B. C., and eighteen at Victoria, B. C., have joined the colors for overseas service.

GREAT NORTH WESTERN CONFERENCES.—Conferences were held at Toronto, Ont., April 11 and 12 of district superintendents, managers of first class offices and head office officials. Ample entertainment was provided outside of business hours. A general meeting of chief operators, assistant chief operators, printer chiefs, district superintendents and head office officials was held April 21 and 22. Mr. W. G. Wetmore, district commercial supervisor of the Western Union Telegraph Company, Boston, was a guest and read a paper on "Service."

THE TELEPHONE.

MR. J. J. CARTY, chief engineer of the American Telephone & Telegraph Company, was the guest of a reception at Symphony Hall, Boston, April 19, by 1,500 employees of the New England company. Mr. Carty described some early experiences with the telephone and predicted that the time will come when it will be possible to talk around the world by wireless telephony. A demonstration between Boston and Tokyo is not far distant, he said. Instead of reducing the use of wires, wireless will increase it, as it will not be possible for all mankind to use the air as one conductor. The real function of wireless will be between ships and with the shore, he thought.

AUTOMATIC TELEPHONE TRAIN DISPATCHING.—The New York Municipal Railway, Brooklyn, N. Y., has recently adopted the automatic telephone system of train despatching.

TELEPHONES IN SUBWAY STATIONS.—The New York Telephone Company has been directed by the Public Service Commission to instal slot telephones in subway stations. Sound-proof booths are to be built of masonry.

LONG DISTANCE TELEPHONE TO HAVANA.—On the completion of the long distance line to Key West, Fla., by the American Telephone and Telegraph Company, steps will be taken to lay a submarine cable between that point and Havana, Cuba.

TELEPHONE SERVICE IN HAWAII.—The total value of the plant of the Mutual Telephone Company which controls the automatic system in Honolulu, Hawaii, is \$891,502; operating and general expenses last year were \$161,483 and income \$290,450. The income for 1914 was \$264,095. There are bonds outstanding amounting to \$260,000.

THE PARIS TELEPHONE SYSTEM.—An appropriation of \$24,000,000 has been asked of the French Parliament for improvements and extension of the

telephone system in Paris. Six large new exchanges will be established. The three existing exchanges will be enlarged and new multiple switchboards for 12,600 lines installed. Long distance underground lines will also be laid.

TELEPHONE SERVICE DURING STRIKE.—During the strike of street car employes in Pittsburgh, Pa., May 1 and 2, the telephone was extensively used in shopping in order to avoid walking. The telephone companies provided automobile transportation for their employes from their homes to insure uninterrupted telephone service, as there was no other dependable means of conveyance.

Notable Meeting of Franklin Institute.

Transcontinental and wireless telephone demonstrations will be made in the hall of the Franklin Institute, Philadelphia, during the afternoon and evening of May 17. In the afternoon the Franklin Medal will be presented to Mr. J. J. Carty, chief engineer of the American Telephone and Telegraph Company and to Prof. T. W. Richards, of Harvard University, and the Elliott Cresson Medal to the American Telephone and Telegraph Company, Mr. Theo. N. Vail, president. Addresses will be made by Mr. Vail; by Mr. Carty on "The Telephone Art," and by Prof. Richards, on "The Fundamental Properties of the Elements."

Institute Transactions by Long Distance Telephony.

On Tuesday, May 16, simultaneously with the meeting of the American Institute of Electrical Engineers in New York City, meetings of sections will be held in Boston, Philadelphia, Atlanta, Chicago and San Francisco, and all of these meetings will be connected together by long-distance telephony. Arrangements are being made to supply each one in attendance in these different cities with receivers, which will be connected to a line joining them all. A number of transmitters will be in service at each one of the meeting places, and what is said by the speakers in each of these cities will be heard by all of those in attendance at the various meetings.

It is proposed not only to have short addresses in the various cities which may be heard by all, but to actually transact some of the business of the annual meeting by telephone communication.

Test of Wireless Telephone Communication With Warships.

On Saturday afternoon, May 6, according to prearrangement with the American Telephone and Telegraph Company, Secretary of the Navy Daniels in his office at Washington sent orders by wireless telephone to Captain L. H. Chandler of the United States battleship "New Hampshire," lying in Hampton Roads. Secretary Daniels and other navy officials later talked with the naval stations at Norfolk, New York, Chicago, San Diego, Cal., Pensacola, Fla., and other points. The tests were continued until Monday afternoon, May 8, during which time the navy department transacted its

official business with naval stations by long distance telephone.

This was the first rapid communication mobilization test made by the navy, bringing the department into instantaneous connection with all shore stations. During the test the battleship "New Hampshire" was ordered to sea and to return to the Potomac River by Monday, reporting to the department over the wireless telephone every hour.

More than fifty guests were present at the beginning of the tests, including army and navy officers. Participating in the test were the following representatives of the American Telephone and Telegraph Company: Messrs. U. N. Bethell of New York, senior vice-president; N. C. Kingsbury, vice-president in charge of the long-distance lines department; J. J. Carty, chief engineer; Bancroft Gherardi, engineer of plant; C. H. Wilson, general manager; F. A. Stevenson, general superintendent of plant; F. H. Bethell, president of the Chesapeake and Potomac Telephone Company, and Messrs. Colpitts and Arnold, representing the Western Electric Company.

The voices during the test, it is stated, were very distinct, and the demonstration was a success in every particular.

TEACHER—How did the people tell the time before clocks and watches were invented?

SCHOLAR—They went to the telephone and asked Central.—*The Telephone Review*.

RADIO TELEGRAPHY.

IMPROVEMENT IN WIRELESS.—Mr. William Marconi states that recent developments in wireless telegraphy will permit of wireless messages being received on aeroplanes, and make it more difficult to intercept and "tap" messages.

RADIOTELEGRAPHIC ANTENNA.—The Bureau of Standards, Washington, D. C., has issued scientific paper No. 269, on "Effect of Imperfect Dielectrics in the Field of a Radiotelegraphic Antenna," by John M. Miller, assistant physicist. Copies can be obtained of the Superintendent of Documents, government printing office, Washington, D. C., at five cents per copy.

ONE-THOUSAND-FOOT WIRELESS TOWER.—It is stated that a wireless tower 1,000 feet high is to be erected at some point on Long Island or the Connecticut shore, between Sayville and Bridgeport, to be used by the Federal Holdings Company in wireless communication with a tower near Buenos Aires, for which a concession has been obtained from Argentina.

INSTITUTE OF RADIO ENGINEERS.—A meeting of the Institute of Radio Engineers was held Wednesday evening, May 3, in the Engineering Societies Building, New York.

A paper by Prof. A. E. Kennelly of Harvard University, president of the Institute, and Mr. H. A. Affel on "Skin Effect Resistance Measurements for Conductors at Radio Frequencies up to 100,000 Cycles per Second," was read.

OBITUARY.

Death of Enos M. Barton.

Enos M. Barton, aged seventy-two years, former president of the Western Electric Company, and a telegrapher in his early career, died in Biloxi, Miss., May 3.

Mr. Barton was born in Jefferson County, N. Y., and at the age of twelve years was a messenger in the Watertown, N. Y., telegraph office, afterwards becoming an operator. He worked in various offices in central New York as operator and while engaged as night operator for the New York Central Railroad in Rochester entered the University of Rochester in the class of 1864. A year later he entered the University of the City of New York, where he finished his sophomore year.

During the civil war Mr. Barton worked in New York as operator on press circuits, and, returning to Rochester, became chief operator for the Western Union Company in that city. About 1869 he became associated with Elisha Gray in an electrical machine shop in Cleveland, Ohio, under the firm name of Gray and Barton. The business was moved to Chicago and continued by the Western Electric Manufacturing Company after 1872, Mr. Barton becoming secretary and, later, vice-president. This company was absorbed by the Western Electric Company in 1879 and Mr. Barton became president of the latter on the death of General Anson Stager in 1887. He retired from the presidency of the company in 1908 and became chairman of the board of directors, which position he held at the time of his death.

LAWRENCE OBERST, a telegraph operator connected with the race track service at various points died in Washington, D. C. April 30.

G. H. STOCKBRIDGE, aged sixty-four years, a well known patent attorney of New York, died April 26 after an operation. Mr. Stockbridge was a member of the firm of Rosenbaum and Stockbridge, patent attorneys, who were well-known in the general electrical field.

WILLIAM E. BARRETT, aged fifty-seven years, of the firm of W. E. Barrett & Co., lumber dealers, Chicago, Ill., recently died in the Evanston, Ill., hospital. In earlier life Mr. Barrett was a train dispatcher on the Grand Rapids and Indiana Railway at Grand Rapids, Mich., and later manager for the American Union Telegraph Company in South Bend, Ind. He is survived by his wife.

ALBERT J. DESSON, aged sixty-eight years, a well known old time telegrapher, of Cleveland, Ohio, died in that city April 23, from the effects of a stroke of paralysis. He had been connected with the Western Union Telegraph Company for forty-seven years, most all of the time in Cleveland. He was placed on the company pension roll over a year ago, after he suffered the stroke. Mr. Desson taught the publisher of this paper telegraphy in the Cleveland dock office in 1869. He was of a gentle nature and well liked by all who knew him. His death occurred on the sixty-eighth anniversary of his birth, and the funeral was attended by a large representation from the Western Union Cleveland force. He leaves a wife, one son and two daughters.

Magnetic Club Spring Dinner.

The spring dinner of the Magnetic Club was held at the Hotel McAlpin, New York, Thursday evening, May 4, with a large attendance of members and guests—there being about 200 persons present in all. Enthusiasm and good-fellowship without limit prevailed throughout the evening, and Mr. Clarence H. Mackay, the guest of honor, joined in the festivities with as much ardor and freedom as the rest of the members.

At the table of President Reynolds sat Messrs. Clarence H. Mackay, C. C. Adams, C. P. Bruch, G. H. Usher, and C. F. Leonard. This was Mr. Reynolds' maiden appearance as president of the club.

After the dinner was disposed of President Reynolds, in introducing Mr. Mackay remarked incidentally that the club had had twenty-eight birthdays and is still strong and vigorous, with a most promising future before it. The guest of the evening, he said, needed no introduction to any gathering of telegraph men in this or any other country. "He is an old member of the Magnetic Club and he is proud of it, and we are proud of him as a member."

In response to the very cordial greeting from the members on the floor, Mr. Mackay expressed much pride in his membership in the Magnetic Club, and pleasure in being present on the occasion.

Mr. Mackay in his talk dwelt chiefly upon the fine record of the telegraph operators, particularly with regard to their secrecy in the handling of private confidential messages, and he paid special attention to those men who had risen from the bottom rung of the ladder to the top rung, enlisting much enthusiasm when he said he was proud of being the son of one who had also started life with few advantages.

Mr. Mackay then touched briefly on the general economic situation in connection with the present European conflict and wound up by saying that although he deprecated war, he felt if it ever did come the telegraph company he had the honor to represent would answer the call as promptly and with the same loyal spirit as did the United States Military Corps in the days of the Civil War.

At the conclusion of Mr. Mackay's remarks, an excellent vaudeville entertainment was given.

Mr. Reynolds announced that Mr. Mackay would present each one present, with his compliments, with a copy of the flashlight photograph of the gathering taken earlier in the evening.

Those present were:

Atlanta, Ga.—G. H. Usher.

Baltimore, Md.—A. J. Vogt.

Binghamton, N. Y.—F. G. Wyman.

Boston, Mass.—F. P. Brennan, E. C. Foley, J. D. McDonald, C. A. Richardson, R. E. Tobin.

Buffalo, N. Y.—H. D. Reynolds, C. Weydman.

Cincinnati, Ohio.—F. H. Minning.

Cleveland, Ohio.—F. W. Sprong.

Elmira, N. Y.—J. S. McIntyre.

Gloversville, N. Y.—P. Moldenhauer.

Harrisburg, Pa.—C. E. Diehl.

Hudson, N. Y.—F. S. Waldorf.

Jersey City, N. J.—Fred. Ackerman.

Manchester, N. H.—J. T. Phillips.

New York.—A. C. Ackerman, J. J. Astegher, J. J. Alcock, C. C. Adams, A. Auslander, J. H. Abbihi, C. P. Bruch, W. P. Bowman, E. D. Brewster, R. S. Brewster, H. A. Brown, J. M. Barry, D. J. Burns, F. J. Block, A. H. Clark, W. Commerce, E. A. Coney, J. J. Cardona, J. J. Cochrane, S. Cohen, Dr. G. A. Cardwell, C. M. Chapman, A. F. Chamberlain, M. M. Davis, H. G. Davis, T. J. Donovan, J. J. Donoghue, J. Doran, W. B. Dunn, Wm. J. Deegan, J. A. Dupuis, D. Davis, T. E. Donohue, A. J. Eaves, J. S. Ellis, H. G. Funk, R. J. Ford, J. H. Flood, V. Fiore, J. J. Fredericks, M. F. Geigle, R. Gould, E. R. Gailer, J. C. Geigle, D. H. Gage, Jr., J. J. Ghegan, J. Goldhammer, William Hodgins, Dr. L. R. Hallock, W. S. Hallett, J. H. Hess, T. E. Hammond, W. A. Hubbard, R. J. Hall, P. A. Hickey, C. Hellmuth, J. F. Henry, Geo. A. Hamilton, H. J. Jenkins, W. Jurist, W. J. Kavanaugh, F. J. Kernan, E. Kimmey, W. H. Kelly, M. Klepper, A. F. Kavanaugh, A. M. Levenson, C. F. Leonard, C. P. Linder, F. S. Lockwood, C. A. Lane, Geo. Y. Lewis, Arthur Lockwood, H. C. Law, G. T. Manson, J. A. Manning, R. H. Miller, Clarence H. Mackay, D. F. Mallen, H. G. Madden, W. Mitchell, W. H. Mitchener, H. G. Marks, J. F. McNeill, F. E. McKiernan, C. P. McInerney, D. McNicol, H. J. McNamee, J. J. McDermott, M. A. McConnell, C. J. McCarthy, A. W. McNeill, J. J. McCauley, J. T. Needham, F. F. Norton, C. B. Obst, G. J. O'Brien, J. P. O'Donohue, R. G. Post, F. G. Payne, M. Pertka, Fred'k Pearce, Chas. B. Porter, J. A. Pinto, C. Ruffer, W. Redfleson, D. F. Regan, Edward Reynolds, W. J. Rile, L. O. Rogers, J. Russo, E. M. Sturges, P. R. Shingler, C. Shirley, Frank Sullivan, C. C. Shelley, D. S. Shortall, Isaac Smith, Wm. Scarborough, J. F. Skirrow, T. Singleton, Fred'k A. Scheffler, J. Shanley, R. M. Telschow, E. P. Tully, Wm. L. Thayer, I. B. Taltavall, T. R. Taltavall, A. Teller, F. W. Taylor, E. M. Underhill, H. L. Usher, W. B. Van Size, J. J. Wallace, W. M. Wolff, A. J. Ward, H. Wiese, R. E. Walsh, J. P. Williams, H. R. Waterbury, J. J. Whalen, W. K. Woodward, Chas. Yacht, H. Zweifel.

Niagara Falls, N. Y.—W. J. Martin.

Norfolk, Va.—H. A. Lanier.

Philadelphia, Pa.—C. E. Bagley, W. M. Fitzgerald, D. Logan, C. F. Meyers, R. C. Mecredy, R. F. Miller, E. W. Miller, J. H. Wilson.

Pittsburgh, Pa.—E. L. Kearney, H. M. Kelleher, H. Scrivens, H. J. Colebrook.

Providence, R. I.—J. E. Cotter, G. H. Mills.

Richmond, Va.—C. H. Ashburn, A. K. Akers.

Springfield, Mass.—P. J. Macken.

Syracuse, N. Y.—J. W. Weed.

Troy, N. Y.—S. W. Smith.

Washington, D. C.—G. M. Foote.

Worcester, Mass.—P. S. Durgin.

Mr. E. Clyde Cooksey, manager of the Postal Telegraph-Cable Company's office at Roanoke, Va., in remitting to cover his subscription for another year, writes: "Life would be mighty slow without your publication."

Troubles of a Trouble Man.

BY O. C. GREENE, FORMER SUPERINTENDENT OF TELEGRAPH, NORTHERN PACIFIC RAILROAD, ST. PAUL, MINN.

Speaking of hard luck, I have sometimes thought that Bret Harte drew largely on his imagination in relating what befell "Dow of Dow's Flat," but on considering a parallel case that came under my own observation, have concluded that probably Dow's mishaps were authentic in all particulars. I will vouch for the truth of the following story, as I am sure would also Eddie Hughes of St. Paul, who could, doubtless, add other incidents that have been erased from my memory by lapse of time.

Way back in the late '60s, while we were engaged in building the first telegraph line along a railroad right of way between St. Paul and Minneapolis, there "blew in," from somewhere east of us, a young man of drawling speech and drooping eyelids, who looked and acted sleepy, but who, we found later, was like the proverbial "singed cat."

His name was Peterson, though he answered to the appellation of "Pete" as we became better acquainted. He presented some very good recommendations as a lineman, and, such men being then very scarce with us, he was immediately put to work. We had reached a point opposite what is now Minnesota Transfer and were erecting poles through a very wet swamp. While putting up the wire a day or two later the man on the pole next to Pete, in trying to disentangle it, gave it a sharp jerk which caught Pete off his guard, one of his spurs let go, and he took a header into the swamp. The men being near by, after some judicious tugging, pulled him out, and after resuscitating him, sent him to town for cleansing and treatment. A few days later he appeared on the scene, apparently as good as new, and went to work. Not many hours afterward, having occasion to descend a pole for some tie wires he stuck his hatchet into the top of the pole and started down. By the time he had nearly reached the ground the hatchet became disengaged and fell, of course across Pete's arm, cutting it to the bone just above the wrist. This sent him to the hospital. When sufficiently recovered he was placed in charge of the Grove battery which was then our telegraphic motive power at St. Paul.

Things ran along smoothly enough for a short time but chancing to run out of sulphuric acid Pete stepped across the street to Biggs' drug store and got a large pitcher full. While returning and going down the basement stairs, which were slippery with frost, his feet flew out from under him, and the pitcher of acid was poured over his shoulders and chest. Recovering himself he ran into the battery room where one of the boys who saw his plight, shouted to him to "jump into the water barrel," (this was before the days of the city water-works). This he did, but the result only intensified his trouble until the acid was greatly diluted. On recovering from this stroke Pete's torso was "pitted like a waffle iron," and he was shy one good suit of clothes. Shortly after this he secured the job of lineman on the St. Paul road between St. Paul and Lacrosse. Everything ran along serenely with him

until one day, while his train and one on the Winona and St. Peter road, which parallels it for a distance north of Winona, got into rivalry to see which could reach town first. Pete was enjoying the race from the baggage car door when suddenly a forward stake broke on a carload of lumber on the opposite train and the surrounding atmosphere was quickly and thickly permeated with scantling, one of which, naturally, found its mark in poor Pete's mottled chest. This was serious, but, after pulling out the scantling, he was hurried to the hospital where, in due time, he found himself ready for further eventualities.

Pete now thought it was his move, so, with the help of an "ambulance chaser" he brought suit against the railroad company for heavy damages. With his habitual luck, however, he was thrown out of court on the ground of "contributory negligence." He then came to me, saying that things were getting too lively for him around there and applied for "a nice quiet place" out in Dakota as operator. He had acquired the art to some extent, though he was not in the speedy class of Shape, Eitemiller and Fred Catlin of those days, but managed to get along comfortably, except for the fellow at the other end of the wire. We had at that time but one telegraph office in the 200 miles between Fargo and Bismarck. It had been decided to establish a few more, so Pete was sent out to a water-tank station east of the Missouri river (which was then the western terminus of the line).

It certainly was "quiet" enough—that is to say—for a time, but one sultry afternoon along came a typical Dakota thunderstorm. The lightning struck our single wire near Pete's office and with a blinding flash blew his box relay into flinders, beyond repair, and, as he said, "with a noise like a gun." (We kept the remains of this relay for a long time to show what Dakota lightning could do.)

Pete sent a message by the next train to the nearest office requesting a set of instruments from headquarters. These were sent him and developments awaited.

One night a few weeks later, Pete having sought his solitary straw bed where he was peacefully dreaming, a howling windstorm struck his frail shack and sent it rolling across country until it collapsed, leaving Pete out in a cold world, in utter darkness, and a raging rain storm—he didn't know where. Not being much injured he staggered back to the railway track, which he followed until reaching the water tank where he built a big fire and dried himself out. This was too much and proved conclusively that the "hoodoo" still pursued him, so he wired for relief with a view to a change of base.

Shortly afterward Mr. Hunter, superintendent of the St. Paul and Pacific, asked me if I knew of a man who could act as agent, operator, lineman, pumper and general factotum at the terminus of his branch line on the Red River of the north. I related Pete's story up to that time and said that if he would take the chances Pete might fill the bill. He was sent for and accepted. On leaving my office he remarked, "Mr. V. I am going to get married and see if I can't change my luck." After marrying, he

went to his new job and began installing his pumping plant, but before this was completed somebody stole his "bull wheel." Search for it proving fruitless, a new one was ordered from Chicago. By the time this reached him the stolen one was discovered in the woods nearby. Meeting his superintendent shortly after pumping had begun I inquired how Pete was progressing. He replied that he had just been up to see him and found the pump idle. On inquiry as to the cause Pete said that his horse was dead. He had appeared to be ailing and somebody came along and advised him to try "Vinegar Bitters," he gave him six bottles and he up and died. This was soon remedied by the purchase of another horse and pumping was resumed.

Having occasion to go to Pete's station some time later I found that he had bought, or taken up, a "claim," broken it and put in a crop of wheat. After it had attained a growth of a foot or more, a cloud of grasshoppers swooped down from the skies one afternoon and alighted on his field, there not being room for all, a large portion of them rested on the fence and as Pete said, sang in unison "In this wheat bye-and-bye," until their turn came to partake of the feast. They literally ate every spear of his crop and Pete averred that they dug down and devoured the roots, but those wise in "bugology" claimed that they burrowed only to lay their eggs in the ground, which was probably correct.

An element of tragedy appeared some time after the grasshopper episode, in the untimely death of Pete's good wife, but this seems to have been the final stroke of ill fortune. Some years later a familiar face appeared at my office door which it required a second look to identify as Pete's, much changed. After a pleasant visit he arose to go when I asked how long he was to be in town, he replied that he expected to remain all winter, and went on to say that his neighbors had been kind enough to elect him to the state legislature, then in session at St. Paul. He had accumulated quite a property and become a man of note in his community, and, like "Dow," everything seemed to end happily with him.

Different Methods of Producing Electricity.

The two principal kinds of electricity produced for useful purposes are chemical electricity and magneto-electricity. Chemical electricity is generated by means of batteries, in which chemical action is transformed into electric energy, and magneto-electricity is evolved by the motion of a wire in a magnetic field.

Batteries are more or less familiar to all operators, especially in small offices, where "locals" are under their care, but not all of them have interested themselves sufficiently to inquire into the causes of the production of electricity by this means. It is not definitely known why an electric current is produced by the oxidation of zinc immersed in acid, but certain laws have been deduced which tell us with exactness what results we may expect when we combine zinc, copper, acidulated water and wire in a certain way.

It is well known that if we place a zinc plate and a copper plate in a jar of water mixed with a little

sulphuric acid and connect the two metals (outside of the jar) with a wire a current of electricity flows through the wire from the copper to the zinc, and from the zinc to the copper through the acidulated water. When the current flows the zinc wastes away; its consumption in fact furnishes the energy required to drive the current through the cell and through the connecting wire. The cell may, therefore, be regarded as a sort of chemical furnace in which fuel (zinc) is consumed to drive the current. The copper plate takes no part in the chemical process, it simply takes up the current from the acidulated water with which it is surrounded. The real starting point of electric action is at the surface of the zinc plate in the acidulated water.

Magneto electricity is produced by the motion of a magnet near a wire, or by moving the wire across a magnetic field. Currents thus produced are known as induced currents. Electric generators (sometimes called dynamos); induction coils; alternating current transformers, and other like appliances, depend for their action upon movement between magnets and coils of wire or upon changes in strength of current in a coil close to another coil. If we have two coils of wire in close proximity and pass a current of electricity through one coil a current is induced in the adjacent coil. This is the principle of the alternating current transformer and of the induction coil.

Early Telegraph Companies.

BY J. C. VAIL, MORRISTOWN, N. J.

I have just read the interesting account of "Early Telegraph Companies," in your issue of May 1, but find no reference to the operation of the Washington-Baltimore line by Alfred Vail and Henry J. Rogers at their own risk and expense. They took it over on December 1, 1846, and operated it until April 16, 1847, when the Magnetic Telegraph Company assumed their contract with the government.

Was not this the first line operated by private parties?

On July 25, 1847, Alfred Vail assumed "the whole responsibility of the Washington-Petersburg line," the first link in the Washington-New Orleans line. That company paid as you say \$150.00 per mile, but it cost actually \$90.00 per mile to build. The line had to be rebuilt at the expense of the stockholders.

Do you know that the Washington-Baltimore line (government built) cost \$30,000 for forty miles? Twelve thousand dollars additional was appropriated by Congress for operation, etc. All this was expended by February 15, 1845, when an additional appropriation was made by Congress, all of which had been expended when Vail and Rogers took it over, as stated.

How about the value of government ownership?

Mr. L. A. Orr, manager of the Western Union Telegraph Company at Dallas, Tex., writes: "Your paper is always welcome in my home and it means an evening twice a month reading a magazine we are all proud of."

Wall Street Notes.

The well-known banking and brokerage house of E. F. Hutton and Company of New York, with branches in all of the principal cities in the country connected by a leased wire service, has arranged to have all employes insured during their employment with the company for a sum equal to a year's salary.

Messrs. Kidder, Peabody and Company, Brown Brothers, and several other well-known bankers and brokers of New York have agreed to permit their employes to attend the Plattsburg, N. Y., training camp for a period of four weeks. The firms will pay the salaries and expenses during this time, in addition to which they will give the employes their regular vacation.

The First Telegraph Line.

Henry J. Rogers, who was closely associated with Prof. S. F. B. Morse and Alfred Vail in the construction and operation of the first telegraph line between Washington and Baltimore, was a native of Baltimore where he was born in 1810. He died in the same city August 20, 1879, at the age of sixty-nine years. At the time of his death, his mother, aged, ninety-one, was still living. Mr. Rogers had charge of the Baltimore end of the first wire connecting that city with Washington and he had charge of the instrument when the message "What hath God wrought," was received. He afterward became superintendent and general manager of the line, and was, when the line was extended to New York City, in 1847, one of the incorporators, with Samuel F. B. Morse, B. B. French, George C. Penniman, Alfred Vail, John S. McKim, J. R. Trimble, Wm. M. Swain, John O. Sterns, A. Sidney Doane and others, under the name of the Magnetic Telegraph Company. He subsequently became superintendent of an opposition line, known as the Bain line, between Boston and Washington. Later he was also superintendent of the North American Telegraph Company, of which Zenas Barnes was president. The first game of checkers ever played over a telegraph line was played by a gentleman in Baltimore. Mr. Rogers officiating at the instrument with Alfred Vail at the Washington end. He was the author of Rogers' code of marine signals, which was adopted by the United States government, as well as the governments of Europe. During the civil war he aided the government in the construction of telegraph lines and was engaged in writing a history of telegraphs at the time of his death. He was intimate with the leading telegraph officials of his day, including Professor Joseph Henry, Cyrus W. Field, besides the people whose names figure in this article.

How to Buy Telegraph and Telephone Stocks.

This publication is prepared to purchase for its friends one or more shares of Western Union, Mackay, Marconi or any other stocks, either outright or on the installment plan. Remit \$10.00 per share as the initial payment if purchase is to be made on the installment plan. The stock will then be pur-

chased at the market price and the balance due on the stock can be paid off at the rate of \$5.00 per month or in any other sum to suit the convenience of purchaser. In the meantime 6 per cent interest will be charged for the balance due on the stock. The purchaser, however, will have the benefit of the dividends, which, in many cases, will more than pay the interest charges. As soon as the stock is paid for, it will be registered in the purchaser's name and delivered to him. The commission charge on the purchase of stock is \$1.00 on transactions covering from one to eight shares. For eight or more shares the commission charge is 12½ cents per share. In remitting to cover purchases of stock, name the price at which purchases are to be made.

Essentials of Electricity.

An excellent book for students of electricity is "Essentials of Electricity," a text book for wiremen and the electrical trades, by W. H. Timbie, head of the department of applied science, Wentworth Institute, Boston, Mass. The book touches briefly on the principles of the telegraph and the telephone, but its general character covers every use of electricity, and for that reason is particularly valuable to the student and the practical man. A student of telegraph or telephone engineering should not confine himself to the telegraph or the telephone alone; it is very important to know, in a general way, at least, how electricity is applied in other branches. This book tells all this, and has the special advantage of being a very practical education through the many problems found throughout the volume, as study progresses. The answers to the problems are contained in a pamphlet separate from the book. The contents of the book cover Ohm's law; simple electric circuits; combinations of series and parallel systems; electric power; wire and wiring systems; generators and motors; locating and correcting trouble; batteries; wiring diagrams, etc.

This is a real practical work and is worth having and studying. It contains 271 pages and 222 illustrations and measures 5 by 7 inches, which is a suitable size to slip into the pocket.

The price of the book is \$1.25 per copy, and of the pamphlet containing the answers 25 cents extra, \$1.50 in all. Copies may be obtained of TELEGRAPH AND TELEPHONE AGE, 253 Broadway, New York.

ELECTRICAL INSTRUMENTS AND TESTING.—Wire chiefs find it necessary now and then to brush up their knowledge on testing of lines, and are sometimes at a loss to know just where to find this information. "Electrical Instruments and Testing," by N. H. Schneider and Jesse Hargrave, is a complete and practical explanation of the instruments used in testing and gives the rules for making tests of every description. Mr. Jesse Hargrave, a well-known telegraph engineer, is the author of the chapter on testing, which represents up-to-date practice. The size of the book is 5x7¼; it has 256 pages and 133 clear and useful illustrations. Price, \$1.15 per copy. For sale by TELEGRAPH AND TELEPHONE AGE, 253 Broadway, New York.

The Morse Relay as a Telephone Receiver.

Mr. C. E. Cale, manager of the Western Union office at Iowa Falls, Iowa, describes a phenomenon that came under his observation recently. His office is located one-half of a mile from the Chicago and Northwestern Railroad station. The railroad company has one wire through the town and is used both for telegraph and telephone purposes. The station office is equipped for composite operation while at the Western Union town office the equipment is simplex. Recently Mr. Cale heard on his relay a telephone conversation between the railroad office and the agent at Alden, five miles distant. He frequently hears such conversations, he says, and is mystified thereby.

This phenomenon is frequently observed. When Mr. Edison was conducting his telephone experiments in Menlo Park, N. J., about the year 1876, he cut in on the Associated Press wire one night and requested the New York operator to screw up the relay contact points and listen. This was done and presently the notes of a cornet and a violin, played in Menlo Park, filled the air, and the telegraph instrument was the centre of attraction for a while.

Now for the explanation. A telegraph relay and a telephone receiver differ only in construction—the elements are the same in both. Each has a magnet, which acts on an armature, in the case of a relay, and on the diaphragm in the case of the telephone receiver. The armature and the diaphragm vibrate in unison with the variation in the intensity of the electrical current. If the air-gap between the relay armature and the magnets is reduced by screwing the contact points down tight the telephone conversations, etc., can be better heard. The conditions referred to by Mr. Cale are favorable for the reproduction of telephone conversation on a Morse relay.

Suits Against Telegraph Companies.

Complaints and suits against telegraph companies on account of alleged losses occasioned by delays or errors occur as regularly as the rising and setting of the sun, and in most instances are as wild in their claims as the dreams of avarice, says the *Postal Telegraph*. Nothing stirs the imagination of the claimant as to his fancied losses like a claim against a telegraph, railroad or express company. And by the same token there is no grief so poignant and no mental anguish so great as that occasioned by the knowledge that a telegram announcing the death of a thirty-second cousin was delayed or was not delivered. Remotely prospective profits become actual money in bank in the mind of a claimant whose telegram soliciting orders becomes lost or is delayed. There are also instances where efforts are made to make up the deficits of a "bad" year by working up claims against the telegraph, railroad and express companies. And these claims will continue, because so long as the human element enters as largely as it does into the operation of the telegraph business, and as long as there are electric currents that make tricky signals, and storms to blow down pole lines, just so long will there continue to be errors or delays. All we can do is to be just as careful as we can to avoid them.

But it's an ill wind that doesn't blow some one good, and it is a peculiar feature of the telegraph business that a man very often may make more money by a delay or an error in a telegram than he would if they had not occurred; and this is a natural conclusion, because if delay or error in a telegram regarding the execution of an order based on fluctuating prices can cause loss, the same delay or error may by the same token cause an additional profit.

A case of this sort recently occurred. A New York broker had a number of orders for a well-known public utility stock, and knowing that much of it was held abroad, wired a bid, which he admitted was low, on 500 shares of the stock to a big London brokerage house. He waited for a reply, but none came, and so he filled his orders by purchases in the market here.

Several days after the bid had been sent he received an answer, which was marked by the cable company as having been delayed by the censor, and in it his bid for the 500 shares was accepted. As in the meantime the stock had gone up several points and was in heavy demand, the broker had a profit of several thousand dollars on the transaction, which he would not have had if his cablegram had not been delayed.

Did any one ever hear of any such person offering to turn that extra profit over to the telegraph company, or even offering to go "fifty-fifty" with the telegraph company? It's a poor rule that doesn't work both ways, and if the telegraph company gets none of the extra profits caused by its errors or delays, why should it pay out any losses through the same causes?

The American Diplomatic Code.

Ambassadors J. W. Gerard and F. C. Penfield, at Berlin, and Vienna, respectively, and Minister Van Dyke at The Hague, have joined in a protest to the State Department at Washington against the continued use of the present American diplomatic code.

According to the State Department the United States secret code is known to several of the European belligerents but that secret dispatches could still be sent.

It was learned that an American code book was stolen from an attache of the American minister to the Balkans shortly before the outbreak of the war. Secret service men tried for weeks to trace it before the loss was communicated to Washington. It is not known what belligerent possesses this volume, but the American envoys are convinced that every important European power can read not only the diplomatic but the naval secret codes.

In many of the foreign embassies and legal circles, English, French, German and other foreign attaches have acted as American code experts. It is quite possible that several men who have handled the American diplomatic code are now in the employ of European governments.

SPENDING MONEY.—Any one can spend money, that is the easiest thing in the world to do, but the test of character comes in what we spend it for.

Telephone Chief Operator's and Monitor's Equipment.

Few telegraph employees are familiar with the duties of chief operators and monitors in telephone exchanges and the apparatus provided for them to carry out their work. The following description from "American Telephone Practice," by Kempster B. Miller, will no doubt be of interest to those who wish light upon the subject.

The apparatus and circuits by means of which such employees as the chief operator, wire chief, monitor and service clerks are enabled to perform their various duties are usually mounted in the desks at which these employees sit.

The principal employees, directly or indirectly concerned in the giving of service, and who rank above the regular operators, are the chief operator, monitors, supervisors, and wire chief. All of these except the supervisor are, as a rule, provided with desk equipments. The duty of the supervisors, in most exchanges, is to walk up and down behind the regular operators, watching the service and helping out where occasion requires. Since the nature of their duties keeps them on their feet, they require no desks.

It is perhaps the more common practice to place the chief operator's and monitor's equipment in the same desk, this being large enough to allow both the chief operator and monitor to occupy it at the same time. During the least busy time either alone may attend to the duties of both.

The chief operator, being in charge of the entire operating force, is usually given the following facilities, for directing, supervising, and inspecting the work of this force, as well as for giving personal attention to those subscribers who may require it:

For observing the service given on any subscriber's line about which there has been complaint, the chief operator is usually provided with a number of lines terminating in jacks and lamps on her desk, and at normally open clips on the intermediate distributing frame. When persistent or serious complaint is received from a subscriber as to the service he is obtaining, one of these lines for observing service may be connected at the intermediate distributing frame with the subscriber's line, and left so connected for sufficient time to allow the chief operator to make a thorough diagnosis of the case. When a subscriber's line is so connected, a lamp will be lighted on the chief's desk, simultaneously with the lighting of the line lamp on the regular switchboard in response to the call of the subscriber. The chief operator, who is provided also with a telephone set terminating in a plug, may, in response to this signal, plug in on the line and thus observe the response of the A operator, noting the time and the method of the response. The chief may also, during the conversation, observe the language and demeanor of the subscriber in asking for a connection, and determine any irregularities which may exist at either end of the line. In connection with each one of these lines for observing service is another lamp on the chief's desk which lights whenever the subscriber on a

line that is under surveillance is called by an A or B operator. The chief operator noticing the lamp, may go in on the line with a plug for the same purpose as before. These lines, therefore, which are called "service observation" lines, afford means for the chief operator to personally investigate the justice of complaints as to service by surreptitiously watching the behavior of the subscriber and of his operator in answering his call, and of any operator in calling him up.

The chief operator is also provided with several lines terminating in her desk in jacks and lamps, and multiplied through the main switchboard as regular subscriber's lines. By means of these lines leading to the chief operator's desk, the chief operator may be called by an A or B operator in the same manner as a subscriber would be called, and if need be, the chief operator be put in communication with any subscriber over these lines. In this way the A or B operators are enabled to refer any subscriber whose business demands it, directly to the chief operator, thus relieving these operators from all duties which might detract from their regular work.

When the chief operator and monitor occupy the same desk, this is usually equipped with lines called "monitor's taps." There is one of these for each regular operator in the office, each leading from a jack on the desk to the head telephone of an operator. By inserting a plug into any one of these jacks the chief operator or monitor is enabled to listen to the conversation of a regular operator without her knowledge. When the chief operator's or monitor's desks are separate, these taps terminate in the monitor's desk.

In addition to the different circuits mentioned, the chief operator's desk is usually provided with lines leading to various local points in the exchange, such, for instance, as a line to each of the other desks, a line to the traffic manager's office, and lines to the office of any other official who may have need for direct communication with the chief operator.

OPERATORS FITTED FOR ANY POSITION.—The postmasters throughout the country are required by law to notify a publication when a subscriber changes his address. A few days ago we received an official communication from the Brooklyn, N. Y., postmaster, Mr. Walter C. Burton, who is himself an old telegrapher, to change the address of Thos. E. Fleming, the well-known old-timer. There are no positions in the gift of the president of the United States that telegraph people cannot be found to fill.

TELEGRAPH AND TELEPHONE OPERATORS.—According to government statistics recently issued there are in the United States 8,219 women telegraph operators and 86,262 telephone switchboard operators.

Mr. A. C. Cronkhite, district commercial superintendent of the Western Union Telegraph Company, St. Louis, Mo., in remitting to cover a renewal of his subscription writes: "You did exactly right. Keep my subscription alive."

Testing Quadruplex and Duplex Instruments.

BY M. M. DAVIS, ELECTRICAL ENGINEER, POSTAL TELEGRAPH-CABLE COMPANY, NEW YORK.

Any quadruplex or duplex set may become faulty in one or more of a number of places. Defects that cause entire failure to operate are the easiest to detect. Such defects are usually remedied promptly. Defects that only slightly cripple the set but do not stop it are much harder to place and much less certain to get treatment. Many defective relays and resistance coils are doing harm because their defects are not even suspected. It is often assumed that there is no way to test them without disconnecting them. The method here described is not new, but there is good reason to believe that it is not commonly used.

First, measure the total resistance of the balancing coils of a spare rheostat to make sure it is not defective. If you have no means of measuring the spare rheostat try it, anyway.

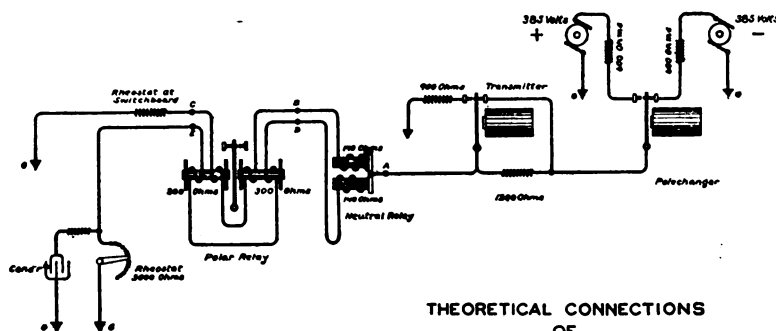
Put the line wedge of the set to be tested in a

the condensers are all in circuit as it is when they are all out. (Be careful not to let the condensers discharge through the voltmeter and bend the needle.)

While taking these readings the voltmeter needle may be somewhat unsteady because the dynamo pressures are likely to change slightly. If these pressures are extremely variable you will have to be careful not to be misled by them; but after a little practice you will detect a defective instrument very quickly.

Having assured yourself that the relays and condensers are in good order, you can readily and quickly test the rheostat by changing the resistance of the rheostat at the switchboard and then balancing your set. If there is nothing defective the resistance in the two rheostats ought to be alike.

There is one more test that is sometimes useful in detecting a cross between the windings of either relay. To make this test, remove the wire that connects the binding posts of the neutral relay together



TESTING QUADRUPLIX AND DUPLEX INSTRUMENTS.

grounded flip at the switchboard in series with this rheostat. Make the resistance of the rheostat at the switchboard 2,000 ohms. Then balance the rheostat on the table in the set against the one at the switchboard. After securing a rheostat balance (a static balance is not needed), let your long end remain closed a few minutes to heat up the instruments and coils and develop the defects if there are any. Get a voltmeter and connect a cord and wedge to each of its two terminals. By the time it is ready the quad set will have warmed up a little. Change the resistance at the switchboard to 5,000 ohms and quickly take a new balance. Now touch the voltmeter terminals at the points lettered in the accompanying drawing. The balancing resistance has been calculated to permit you to use the low reading scale of the voltmeter. If the difference of potential (volts) between A and B is the same as that between A and D the neutral relay is o. k. If the volts between B and C are the same as between D and E the polar relay is o. k.

To test the condensers turn the knobs until the full capacity is in circuit and measure the difference of potential between E and G. Then turn the knobs until there is no condenser capacity in circuit and again measure the difference of potential. If the condensers are not leaky the difference of potential between E and G should be the same when

at A; put battery on the set at C. If either relay is crossed there will be a circuit to the earth through the balancing rheostat, which will be indicated by a magnetic pull upon the armature of one or both relays.

To measure the proportion of the long and short ends of a quadruplex, measure the difference of potential between C and G with the long end closed, then measure with the long end open. As quads are usually operated the first reading will be about three times the value of the second.

Live Timber for Poles.

One of the most important items in the inspection of poles is to be sure that when the tree was cut it was alive and growing. Live cedar always has a ring of white sap wood surrounding the heart wood. No matter how unsightly or discolored the exterior of the pole may be, a shaving from a live pole will show white sap wood. It occasionally occurs that a dead streak will be found on a pole caused by injuries to the growing tree. If the dead sap wood covers only a small part of the circumference and is shallow, not extending into the heart of the tree, it does not necessarily affect the strength of the pole, but a pole encircled with gray dead sap wood is brittle, without elasticity and unfit to bear any strain.

Early Boyd Arrives.

BY R. M. TELSCHOW, NEW YORK.

Aside from fame as an itinerant "brass pounder" Early Boyd was a walking encyclopedia on places, persons and things. He could talk a smattering of four languages and play poker better than a professional gambler; he could get a respectable tune out of a one-stringed fiddle and knew how to make a pianoforte yield exquisite melody. Politics was a subject he could discuss with the fervor of a county chairman; the exception being that Early Boyd argued on the side of either large political division with equal facility and possessed the happy faculty of discerning the predilections of his locality. It is quite unnecessary to add he usually remained on the popular side. He was a living, breathing railroad guide, an authority on dogs and whiskey, insect exterminators and baseball, and would rather eat than telegraph, although he did both after the fashion of an expert.

Had he a middle name it certainly should have been Resource. We have never known Boyd to become nettled at the vicissitudes which cropped up from time to time during his nomadic career. Indeed, it is doubtful whether soldiers of fortune worthy of a biographical sketch ever succumb ignominiously to obstacles placed across their adventurous pathways by Fate. Constant intercourse with various phases of human nature sharpens their perceptive faculties and renders faultless generalship a necessity if they would survive oblivion. The spirit of do and dare urges them onward; to idly sit and dream of conquering worlds in this day of mercenary mummery would be nothing short of madness.

Early Boyd returned to New York recently after a very enjoyable winter season spent in sunny Texas, and immediately laid siege to a job. He knew of a certain main office downtown where he thought he should like to play a return engagement. Every morning shortly before nine o'clock he presented himself at the threshold of this office. Finally the manager felt fully persuaded that the only way to abate the imperturbable Early was to put him to work.

The victorious Boyd was assigned to fill a vacancy on the first Yaphank duplex alongside of Miss Mollie Baxter, the well-known woman bonus operator.

"Go ahead to 'Bd,'" said the migratory operator in beautiful American Morse. Boyd was rusty and soon got into trouble. The sender at Yaphank was whooping it up and each time Early 'broke' went ahead faster than before.

"Ah, ha," thought Boyd, "I'll try my famous relief stunt on this fellow."

He reached for the key, and in short, snappy jerks signalled "Bk rlf."

In another moment, disguising his writing, he said: "Rlf go ahead to 'IB.'"

Pretty soon his 'mill' failed to space, he went over a line, letters piled, a blank got stuck, he ran off the blank, and what not. No wonder the man at the distant station became peeved again.

"Aw, you're nearly as bad as the other fellow," he asserted.

At the end of the day Early proudly reached for "the button."

"Ha! Ha!" he chaffed, "I fooled you."

Next day when sitting in on the receiving side he nonchalantly requested Mollie to "tell the gink to go ahead."

"Shall I tell him it's 'IB'?" asked the girl.

"Might as well," flushed Boyd.

"'Bd' says go ahead to 'IB,'" innocently passed Miss Baxter and it isn't necessary to elaborate what Early Boyd had coming to him.

When he 'changed over,' and was compelled to transmit to the Yaphank operator, the latter seemed to take especial delight in endeavoring to get Early's angora. The smart fellow suddenly said: "Go ahead 'amen.'"

Boyd looked over his copy carefully, but failed to find the word.

"Not in it," he vouchsafed.

"Sure it's in it," from the clever one.

"Where is it, then?"

"In the bible!"

Boyd exploded, and wrathfully rang in the quad chief.

"What's the matter?" asked the quad attendant.

"This wire is no good," declared Boyd.

"How does it act?"

"It doesn't act."

"What is the nature of the trouble?" persisted the quad chief.

Early had read the war news before breakfast.

"It goes down and comes up like a submarine," he clicked in high glee at getting back at somebody. Then he rested while they balanced.

During his lunch relief it was Boyd's custom to drop into the gentlemen's rest room after dining to enjoy a quiet smoke or game of checkers. Sometimes there was a lively discussion of the European war or Mexican situation going on, and as Boyd was a keen student of current history he usually waded right into the thickest of the fray.

On one occasion operator Henry Shepherd discoursed learnedly on the wonderful military machines of Germany, France and Great Britain and the relative unpreparedness of our own country; he made the assertion that if it came to a showdown our glorious country would surely meet with disaster.

"Besides," he argued, "we are face to face with the yellow peril—the menace of Asiatic aggression."

"Speaking of the yellow peril," dryly commented Early Boyd, "we have one right here in the office today—"

Everybody eagerly sought the speaker's serious face.

"The correction slip!" he concluded.

Mr. Levi S. Wild, an old-time telegrapher, formerly and for many years manager of the Western Union Telegraph Company at Butte, Mont., in remitting to cover a renewal of his subscription to this publication writes: "Thank you for renewing my subscription. You probably know I'm 'out of the game,' but wishing to keep in touch with the old and new crowd, the AGE is the proper medium; it's my old friend."

Representative G. E. Hood a Former Telegrapher.

Hon. George E. Hood, representative in the United States Congress from the third district of North Carolina, started his career as a telegraph operator, and, as in many other cases, the experience acquired in the telegraph service furnished a sound and reliable basis for future development and success.

Mr. Hood was born in Wayne County, N. C., January 25, 1875, and began his telegraph career at Goldsboro, N. C., in 1891. At the age of seventeen, in 1892, he was made bookkeeper for the Western Union Telegraph Company and assistant manager in 1893, and in 1894 accepted a position as telegraph operator and billing clerk with the Southern Railway Company at Goldsboro. He was afterward transferred to Raleigh, N. C., as cashier and telegraph operator for the same company, remaining there until 1896, when he began the practice of law. He studied law while working as an operator and obtained a license to practice February 3, 1896.

Since 1898 Mr. Hood has filled various political positions in his native state, being Mayor of Goldsboro during the years 1901-1907. He was a captain in the North Carolina national guard, retiring with the rank of Colonel in 1909.

Associated Press Operators Commended.

At the annual meeting of The Associated Press held in New York April 25 the board of directors commended the operators in the traffic department for the increasing interest manifested by them not only in the immediate work of their department, but also for assistance given the news department.

Many instances occurred where the operators furnished the first bulletins on important events. At the time of the Galveston storm one operator risked his life to get into communication with the outside world and give the first word of the catastrophe to The Associated Press.

The storm which swept over the southeastern section of Texas in August last, throwing down telegraph lines everywhere and interrupting communication of every sort, brought out the kind of performance from Associated Press men which hardly ever fails to be forthcoming in the service in cases of great emergency and stress. Both newsmen and operators in the Louisiana and Texas offices not only showed the highest degree of energy and resourcefulness in getting the facts and finding means to transmit them, but in some cases they cheerfully risked life and limb and went for long hours without food and sleep in order to carry out their conception of their duty to the organization.

One operator in Montana remained at his post after an accident in which he suffered a broken leg, this because in his remote city no substitute was available.

"Such devotion to the service should earn the commendation not only of the board, but also of the entire membership," said the directors.

At the election of officers Mr. Frank B. Noyes was reelected president and Mr. Melville E. Stone general manager and secretary, both for their eighteenth consecutive terms.

Questions to be Answered.

[The following questions are based upon the contents of Jones' "Pocket Edition of Diagrams and Complete Information for Telegraph Engineers and Students," and have been prepared for the study of this book. The asking of questions to be answered by the student is an excellent method of acquiring information, besides cultivating the habit of concentration of thought which is so essential in the study of any subject. Every telegrapher who is desirous of learning the technical side of telegraphy should follow this method of instruction diligently. He will be surprised to note from time to time how his knowledge is increasing and this almost without effort on his part. This book is sold by TELEGRAPH AND TELEPHONE AGE at \$2.00 per copy.]

When a 50-volt direct current is desired why is it necessary to wind the secondaries of chemical cells to 100 volts alternating current? (page 314.)

What is the object of using polarized relays on long telegraph lines? (page 315.)

In the construction of polarized relays what two electro-magnetic actions must be taken into consideration?

What is "hysteresis"?

How may the effects of hysteresis be reduced?

What is "self-induction"?

How may the effects of self-induction be minimized?

Study the construction of the Siemens polar relay illustrated on page 316.

Is this style of relay as well adapted for rapid work as the Barclay relay? (page 317.)

What is the difference between the Siemens and Barclay relays in their constructive features?

How does the Wheatstone relay compare with others of the polarized type?

How is the mechanical inertia of the armature of the Wheatstone relay reduced, and how are the coils of the instrument connected?

What is the object of connecting the magnet coils in multiple? (page 318.)

Upon what does the action of the Freir relay depend, and in what respect does this instrument differ from the old type relay?

Study the operative action of the Freir relay as described and illustrated on pages 319, 320 and 321.

(To be continued.)

OUR EARTH A GREAT MAGNET is the title of an interesting article in the May number of the Journal of the Franklin Institute, Philadelphia, by L. A. Bauer. It gives an account of early magnetic discoveries and a description and work of the non-magnetic yacht "Carnegie."

PEACE TELEGRAMS.—During the last days of April a flood of so-called "peace telegrams" were sent to congressmen and senators at Washington. A compilation of the figures made by the telegraph companies shows that between 140,000 and 150,000 telegrams were received.

MESSENGER BOYS.—The New Orleans *Picayune* of April 30, prints a full page article on the life and work of telegraph messenger boys. The story is well illustrated.

E. Frey, Director of International Cable and Telegraph Union.

Emil Frey, former president of Switzerland, is one of the notable men of the country, who, since retiring from the presidency, has become head of the international union by which the telegraph, cable and wireless systems of the world are regulated at this central point. But while Mr. Frey has risen to the highest office in his own country, he feels that he is about half American for he was in the American Civil War from start to finish as a member of an Illinois regiment, was captured at Gettysburg and held as a prisoner for fifteen months at Richmond, met and knew such war figures as Grant, Sheridan, Lee and Longstreet, and later returned to Washington as Swiss minister, where he renewed the acquaintance with Sheridan and others made in war days.

The International Cable and Telegraph Union, which Mr. Frey directs, is one of those world-organizations administered in Berne. It is rather strange that Switzerland, far from the sea and without any cable connections, should be chosen to direct the vast ramifications of the world's cables, to which has now been added the world's wireless systems, and all the telegraphs of Europe and of the Orient. But it is largely for the reason that Switzerland has no direct interest in these huge systems, and stands at one side as a neutral observer, that she is chosen to carry on this intricate service. Mr. Frey's offices occupy a large building, with an extensive personnel at work on cable and telegraph tariffs, the adjustment of disputes between countries over rates and procedure, the preparation of cable, telegraph and wireless maps and printed volumes embracing every point the world over that can be reached by any of the modern methods of quick transmission.

This union is unique in one respect as it is the first realization of the idea of a world administration. Before it was created in 1865 the different nations had passed similar laws, and uniformity was secured by treaties and conventions under these laws. But the International Union actually realized a world-administration which is now carried on for nations all over the globe with the same regularity as any other administration of a state or private organization.

The war had a paralyzing effect on cable and telegraph transmission—greater in its restrictions and interruptions than anything in the history of electrical transmission. This affects chiefly the belligerent countries, all transmission between them being at a standstill, while the transmission between neutrals and belligerents, and between two neutrals, is very much restricted and subject to new and round-about routes.

But while war has thus paralyzed the cable and telegraph facilities, none of the fighting countries has withdrawn from the International Union; every one of them paid the last regular assessment; and the Union is continuing its work of carrying on this world inter-communication as far as possible under the limitations imposed by censorship and laws completely stopping communication.

Some idea of the tremendous growth of the cable

and telegraph in peace times is given in the last list of stations published by the International Union, compared with their first list in 1868. The first list gave 10,750 as the total number of international telegraph stations throughout the world; the last list gives the number as 175,000. The Union prepared the first list of cables in 1877, when there were 420 government-owned cables, 149 private-owned, totaling 73,745 nautical miles in length. The last cable list shows a greatly increased expansion, viz, 2,687 government-owned cables, 490 private-owned, in all 3,177 cable lines having a length of 295,275 nautical miles.

Just now it is the wireless which is making the most rapid strides, and Mr. Frey finds it difficult to keep up with the sweep of this new medium of communication to the remotest islands of the seas. Each government gets up a list of its own stations, but the Union consolidates the lists of all governments, the American section, for instance, showing all army, navy and private wireless stations, all boats with wireless, including even privately owned yachts with wireless equipment.

The telephone, which is also administered by the Union, shows how this civilizing process is being carried into uncivilized regions. For example, the ivory coast in Africa has eighty-two telephone stations, Senegal 173, Dahomey, eighty-eight, Gabou seventy-seven, Madagascar, 369. And there is hardly a people the world over so low in the scale of civilization as not to be in touch with the outer world in some of the many modern means of quick communication.

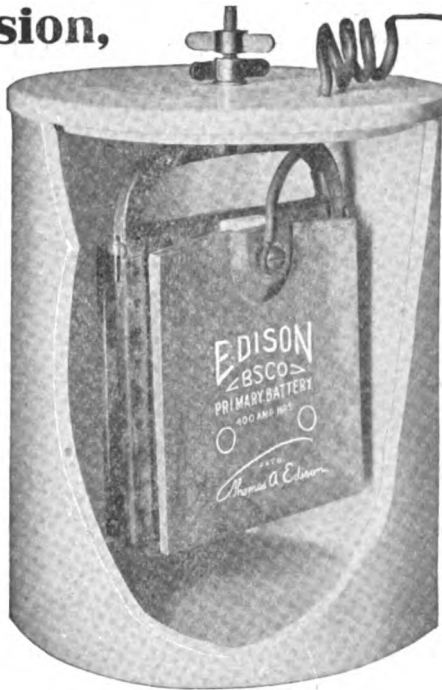
Mr. Frey has seen cable and telegraph rates go down as the extent of the systems has gone up. The rate from Berne to Berlin used to be 15 francs (\$3) for 20 words; now it is 2½ francs (50 cents). The rate to Petrograd has fallen from 35 francs to 8 francs; to Bombay from 100 francs to 50 francs; and from Berne to New York from 540 francs (\$108) for 20 words in 1858, to about 30 francs (\$6) today.

One of the chief ends of the bureau is in establishing absolute uniformity of cable and telegraph service throughout most of the world, with the exception of the telegraph in the United States, where private control and difference in rates to various states has made uniformity impossible. But in most civilized countries the same identical system prevails, so that if a person sends a cablegram from Berne or Paris or Berlin, to Japan, he knows it will go through exactly the same process of delivery as a cablegram from Japan to Europe.

This gives an assurance to the public in communicating to various remote points, besides the administrative control over the network of cable and telegraph wires stretching around the world. However, the control is made automatic as far as possible. For instance, when a dispatch is sent from Spain to Turkey, it passes through many countries and over many lines, the first country taking out its portion, according to the Union's schedules, and passing the balance to the next country; and thus passing along continuing until the terminal portion is finally received by Turkey.

Clear Transmission, Always Necessary Warrants Use of the Highest Grade Battery

A low internal resistance battery that will not polarize, and maintains constant voltage, is sure to give better results in telephone work than a set of cells whose voltage constantly drops when on discharge, or in which the voltage is high or variable.



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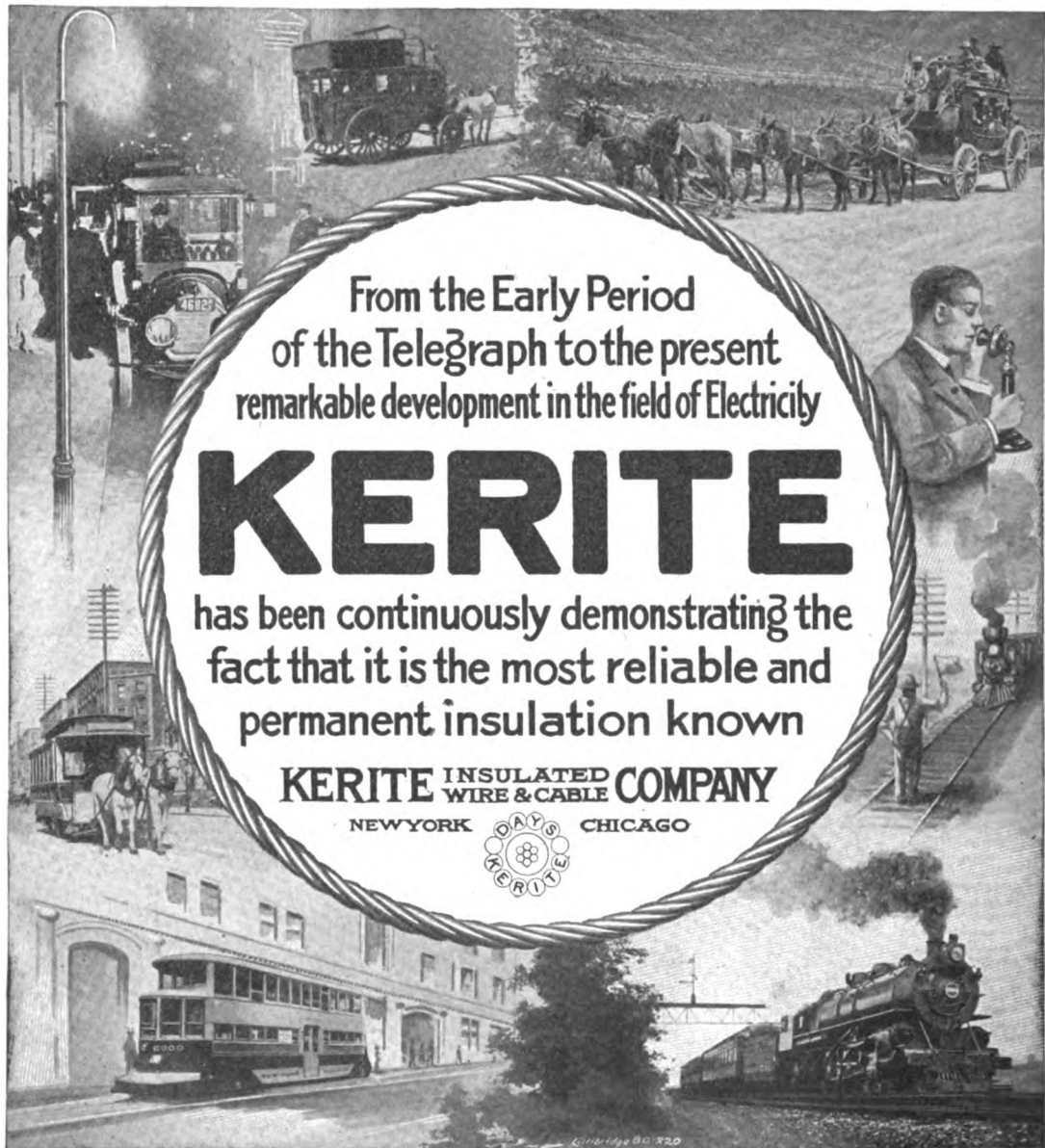
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THE RAILROAD.

W. H. McDOEL, for ten years president of the Monon Railway, and a former railroad telegrapher, was found dead in bed in Chicago April 25.

MESSRS. E. W. SMITH, train despatcher of the Bessemer and Lake Erie Railroad at Greenville, Pa., and B. F. Thompson, telephone inspector Baltimore and Ohio Railroad, Baltimore, Md., were recent New York business visitors.

Convention of Railway Telegraph Superintendents.

The thirty-fifth annual meeting of the Association of Railway Telegraph Superintendents, will be held at the Hotel St. Paul, St. Paul, Minn., June 20, 21 and 22.

The business of the meeting will consist principally of discussion and action upon the special committee reports, which will be issued in advance. These reports will give suggestions and recommendations of standards and practices relating to the principal matters affecting the telegraph, telephone and other electrical departments of railroad service.

While the meeting this year is officially limited to three days; i. e., Tuesday, Wednesday and Thursday, the association has by common consent accepted the invitation of the entertainment committee to stay over Friday, June 23, and attend an outing which the committee has arranged.

An informal get-together assembly will be held in the hotel at 8:00 p. m. Monday, June 19.

Arrangements may be made direct with the Hotel St. Paul for accommodations at the following rates: Room with bath, for one, \$2.00 minimum per day; room with bath, for two, \$3.50 minimum per day; all are outside rooms and each room has bath.

MUNICIPAL ELECTRICIANS.

ALPHONSE J. PRUVOT, aged sixty-four years, city electrician at Sioux City, Iowa, died recently. He was connected with the department service about forty-five years.

CONVENTION OF MUNICIPAL ELECTRICIANS.—The annual convention of the International Association of Municipal Electricians will be held at Baltimore, Md., August 22 to 25, both inclusive. The committee desires the members to send suggestions for papers and topics to be discussed at this meeting to the secretary, Mr. Clarence R. George, Houston, Tex.

New Alarm System for Manhattan.

In his annual report Fire Commissioner Robert Adamson, of New York, states that plans and specifications for the new fire alarm system in Manhattan Borough are being prepared and contracts should be let before the coming summer. The sum of \$875,000 has been appropriated for the work. A reduction in insurance rates of no less than sixteen per cent. on the cost of the system will be made by the Fire Insurance Exchange in recognition of the new system, when complete. All underground subways for the system are to be furnished by the Empire City Subway Company without cost to the department.

Mr. Adamson has applied for an appropriation of \$630,000 for a permanent modern fire alarm in-

stallation, covering one-third of Brooklyn, and for \$545,850 for a new system in the southern half of the Borough of the Bronx. In the storm of last March 1,142 out of 1,718 fire alarm boxes were put out of commission.

Electrical Trades Directory.

"The Electrician" Electrical Trades Directory and Handbook, for 1916, has been issued, and contains a great deal of valuable information for electrical people. This is the thirty-fourth year of the publication of this book, and the volume has become quite indispensable in the electrical trades throughout the world. It is published by "The Electrician" Printing and Publishing Company, London, England, and the new volume is corrected to February 25 of this year.

The book contains about 2,000 pages, and the trades directory section is classified by geographical divisions, as follows: British; Colonial; Continental; Asiatic and African; Central and South American, and the United States. In addition to this there is much general and special information of value to electrical people, such as telegraphic addresses, foreign trade marks, law relating to electric light, power and traction, fire risk and electric wiring rules; notes of the year; telegraphs and telephones; organization and facilities of all cable companies; directory of directors; financial information, etc. At the end there are many biographical sketches of leaders in the electrical field.

Copies of this book can be furnished by TELEGRAPH AND TELEPHONE AGE, 253 Broadway, New York, at \$6.00 per copy, sent by express, carrying charges collect.

INDUSTRIAL.

Telephone for Aeroplanes.

The rush of the wind and the deafening roar of the propeller discourage conversation between the pilot and the passenger in an aeroplane, but a special telephone equipment recently developed by the Western Electric Company makes such conversation possible.

The apparatus, which is called an "Aero-phone," consists of two double-head telephone receivers and two special types of chest transmitters. The receivers are held against the ears by the spring head band so that practically all of the disturbing noises are excluded. The special transmitters are provided with soft rubber caps, and are strapped to the chest at a point below the collar-bone and above the third rib. In speaking, the chest muscles transmit the voice vibrations to the transmitter, thus enabling a telephone conversation to be carried on between the two occupants of the aeroplane.

The receivers and transmitters are connected by suitable cords which terminate in a small plug. The battery required consists of three standard telephone dry cells.

THE STENTOR ELECTRIC MANUFACTURING COMPANY, INC., New York, has issued a catalogue on its autophones. This device is designed to take the place of the speaking tube in limousine cars.

Efficiency Engineering in the Telegraph Service.

(Continued from page 204, May 1.)

On two occasions recently our attention has been called to the fact that one telegraph and one telephone manager had endorsed other people's notes and had to pay. The telegraph man lost \$2,000 but the telephone man got off much easier. The lesson, however, is the same in both cases. It should be made a rule on the part of everyone to never endorse the notes of other people. It may be all right eight times out of ten but the exceptions hurt. In the case of the telegraph man mentioned raising \$2,000 caused the greatest possible embarrassment, with the result that his property had to be mortgaged. Cases of this kind, however, are not new. They occur frequently but the constant warning against the practice of endorsing notes should be heeded. The element of death in connection with such endorsements is seldom reckoned with, yet deaths continually happen which complicate all such transactions and often lead to expensive litigation.

The Rotary Club held an important meeting in one of the Southern cities recently and the manager of one of the telegraph offices took advantage of the occasion and issued invitations to each member to visit the operating department and learn how the business of the nation is being handled. The invitation was couched in such friendly language that it was accepted and over one hundred members called in a body at the office and were shown the operation of the telegraph in all its details. Many of the business men were heard to remark that they did not suppose for a moment that the telegraph was such an extensive institution, so complicated and yet so simple, so valuable and necessary to the business man. Every visitor left the building convinced that the telegraph was an institution that could be trusted with his secrets and that thereafter important letters would find their way to the wires instead of to the post office mail boxes.

When the idea was made for the telegraph companies to adopt the suggestion to send letters by telegraph, the proposition was received with ridicule. The "has-been" officials said that it was ridiculous to utilize the telegraph to transmit letters. Now the proposition has become a reality and there is nothing left to do except to devise ways and means of rifling the mail pouches of their contents in behalf of the telegraph. This presidential year offers an excellent opportunity for managers to induce the nominees for the various offices to utilize the telegraph wires in their "wire pulling" for votes. The printed campaign literature is placed on the sitting room table and is seldom looked over but a short, crispy telegram on the contrary receives immediate attention. If it is written to the point it leaves its impress on the mind of the recipient and that is precisely what the nominee desires. The difference in the expense of the two methods is more than offset by the superiority of the telegraph over the mail service. Political campaigns in the future will be conducted over telegraph lines instead of through the mails.

The chairman of one of the political parties in Boston recently filed at one time with one of the

companies 65,000 telegrams. The bill was \$16,000. This, however, is not the largest number of telegrams ever filed for transmission under the auspices of a telegraph company. The publishers of the Encyclopedia Britannica in London some years ago, when an edition of that work was ready for distribution, filed over 100,000 messages addressed to prospective buyers. The result we are informed was very satisfactory and the investment proved a paying one from every point of view. This illustrates what can be done with the telegraph along lines of salesmanship.

One of the companies is extensively circularizing the community at large offering aid to the forgetful man. Flowers, cigars, fruits, candy, books—in fact, anything short of a house and lot—will be purchased by the company for the accommodation of patrons to be delivered locally or at distant points. Even theater tickets are included in the list. The announcement says: "The service will be a special boon to the man who forgets his birthday or other remembrances, or puts them off until the last minute, since it will enable him to repair his oversight or neglect at the eleventh hour." The list of articles enumerated may seem petty to some people, but it must be remembered that the idea is to impress upon everyone just how flexible the telegraph service is, even when it comes to purchasing goods for delivery at distant points. The public is from Missouri when it comes to spending money. It must be shown how the telegraph can help it, but when once convinced it accepts the good offices of the telegraph with open arms.

The manager of an office must be equipped to give good advice to all inquirers, but he must be a disinterested person, always with the one object in mind—that of boosting the telegraph and pointing out the advantages to be derived by utilizing the service.

(To be continued.)

Old Timers and Military Telegraphers.

Mr. J. Frank Howell, the well known old time telegrapher of New York, now and for many years past in the banking and brokerage business, has been elected vice-president of the Old Time Telegraphers and Historical Association by the executive committee to fill the vacancy caused by the death of Belvidere Brooks.

The reunion of the association this year will be held at the Hotel McAlpin, Broadway and 34th Street, New York City, September 26, 27 and 28, and the Society of the United States Military Telegraph Corps will hold its reunion at the same time and in conjunction with the meeting of the Old Timers.

Mr. F. J. Scherrer, 30 Church Street, and David Homer Bates, 658 Broadway, New York, are secretaries of the Old Timers' Association and of the U. S. Military Telegraph Corps, respectively.

FINED FOR VIOLATING THE RACING LAW.—A fine of \$1,000 was imposed on one of the telegraph companies at Butte, Mont., recently on a charge of transmitting information on which racing bets were made. An appeal was taken.

E-veryone C-an R-emember.

BY JOHN F. DAYMUDE, REPEATER OPERATOR, AMERICAN TELEPHONE AND TELEGRAPH COMPANY, LANSINGBURGH, N. Y.

Referring to the article in TELEGRAPH AND TELEPHONE AGE, dated April 1, by Mr. R. M. Telschow, assistant chief operator, Postal Telegraph-Cable Company, New York, entitled "The 'Erie' Short Cut," in which he states a method by which Ohm's law may be easily remembered, I herewith submit another method which I find very convenient and easily retained in memory.

Arrange the three letters *C E R*, (which indicate the electrical quantities), in the form of a triangle, as shown, remembering that *R* goes in at the "right" hand corner of the triangle. The positions of *E* and *C* can be readily recalled when we know that *E*-veryone *C*-an *R*-emember.

E
C R

In order to ascertain the value of any one of the quantities simply place a finger over the unknown quantity and the operation upon the other two quantities is indicated by their relative positions. Thus, for instance, to find the value of *E* cover that letter, which leaves *C* and *R* on a level, indicating multiplication. To find the value of *R*, cover *R*, thus leaving *E* over *C*, indicating division. *C* covered leaves *E* over *R*, also indicating division.

It is important, however, to use the formation of triangle in order to give the scheme a formula effect and impress upon the student a mental conception of the operation.

The "Erie" Short Cut.

BY R. C. CORSON, ERIE RAILROAD, JERSEY CITY, N. J.

I would like to join Mr. Langley in his apologies to Mr. Telschow, even if it is such a long way from the Erie Railroad to Vancouver. It would seem that he and I essayed the mysteries of Ohm's law long before Mr. Telschow did, for we both conquered it when the letter *C* represented current. I find it easy to hold in mind the formula $C = E \div R$ because the three letters plainly suggest the words they represent and they stand in their alphabetical order.

Therefore I do not love the modern iconoclasts who have substituted the personal pronoun for the letter *C* to represent current.

Wire Making an Old Art.

Wire is one of the most important products of the metal industry. Without it, electricity, as it is so generally used to-day, would be quite impossible. The world is encircled by wires. Like the silken strands of a cobweb they are woven over the face of civilized countries, stretched across the trackless wilderness, and buried in the sands of every ocean.

The making of wire is one of the oldest of the metal arts. Thousands of years ago wires of gold and silver were drawn. The ruined cities of the early Egyptians contain wires. Even the prehistoric civilization knew how to make it. Wires of gold and silver have been recovered from the graves of

the ancients in Asia, Africa and in South America.

The first wires were rolled from thin strips of metal. It was a long time before an inventive silversmith discovered that the metals could be drawn into wires of any thickness by pulling them through dies. By gradually decreasing the size of the die the metal can be drawn out as fine as a silk thread. Indeed, the metal tungsten is drawn out finer than a human hair for the filaments in Mazda electric lamps.

Wire is indispensable to the electrical industry. Without wire there would be no generators, no motors, no converters, no transformers, no measuring instruments, no telegraph or telephone instruments, no transmission of speech or power, and no distribution. Even so-called wireless apparatus is based on the proper placing of antennæ composed of wire.—*Electricity*.

"Old Farmer" Lawton on the Move.

Mr. G. E. ("Old Farmer") Lawton of Denver, Col., announces the change of residence in the following card:

"Married

"Geo. E. ("Old Farmer") Lawton and Miss Emma Leola Bidwell, July 4, 1886.

"This young couple will be "at Home," Plymouth, Illinois, after May first, 1916."

In a letter Mr. Lawton says:

"You will notice by inclosed that the 'Old Farmer' is about to migrate to a lower altitude, so if you will change my address on your books to read 'Plymouth, Hancock County, Ill.' I'll feel that I'm still in touch with you and the fraternity through the columns of your most valuable paper.

"This does not mean, by any means, that Mrs. Lawton and I are shaking sunny Colorado, as we realize there is no place like the grand old Rocky Mountains. After my forty years' residence a mile above you New Yorkers have come to the conclusion it's about time to come down from my lofty perch and see how my pulse beats near sea level. Have been troubled several years with rather a high blood pressure and am in hopes that by going lower down for eight months or a year that it will assist nature in throwing that off, after which will have nothing to cause me to grunt except when I happen to eat too much.

You will probably think me a trifle slow in getting out the inclosed cards, but no one knows better than you that telegraphers have but little time to attend to such small matters. The fact was, I could not muster up courage enough to pop the fatal question until the boys began shooting off fire crackers on that eventful fourth of July. Then, like all good soldiers, telegraphically or in war, when I began to smell burnt powder, became very bold and imagined I was on the firing line, and the little event that has made us very happy for all these thirty years was pulled off that same afternoon and the next day it didn't snow and I was back in the office to work."

A subscription to TELEGRAPH AND TELEPHONE AGE pays large dividends in knowledge and pleasure. Subscribe now.

LETTERS FROM OUR AGENTS.

NEW YORK POSTAL.

A number of operators and other employes attended a lecture given by Mr. George F. Barber, of the New York Efficiency Club, in the auditor's room on the tenth floor Wednesday evening, April 26. The subject of the discourse was "Personal Efficiency." It was designed to arouse sufficient interest to organize a class for the study of the science.

Mr. James H. Wilson, manager at Philadelphia, called on manager Whalen while in the city recently.

Mr. and Mrs. Prouty, the latter a sister of district foreman John Ellis, jr., of the line department, visited the operating department recently. Mr. Prouty is a druggist in Corning, N. Y., where the newlyweds will make their home.

Many visitors from out of town, including superintendents, managers and chief operators, visited headquarters May 4. They attended the Magnetic Club dinner the same evening, at which President Clarence H. Mackay was the guest.

The West "One" division is the home of the Swift premium ham—pardon us, we meant swift bonus man. The principal circuits are manned by the following: First Chicago, C. R. Schoonmaker and W. M. Wolff; second Chicago, C. R. Closson and M. Bernstein; third Chicago, C. J. Logan and W. L. James; first St. Louis, H. F. Scharff and A. Levenson; first Cincinnati, A. Auslander and B. Padgug; Indianapolis, A. Di Corcia; Louisville, unassigned. The traffic is under the experienced supervision of Mr. C. B. Obst.

Operator J. S. Grogan has been transferred to the 20 Broad Street office. Operators R. N. Bowley, M. J. Gaffney, C. D. Crockett, C. J. Williams and H. J. Foley were transferred to the Cotton Exchange office.

Operator Harry Levenson has graduated from the City "One" division and is now working the eastern and Jersey ways.

Recent appointments are E. A. Cassidy, O. M. Young, L. J. Landry, F. R. Tracy, G. C. Wilkins, R. A. Drake, F. Shakely, G. W. Sweeney, J. Keil, J. J. Bath, F. W. Wheelhouse and P. J. A. Cordette. The resignations include J. J. McKenna, H. L. Carman, J. Fulton and the Misses H. Roth and S. Estreich.

Miss Mae Newman, formerly employed in this office, died on Wednesday, May 10, after a lingering illness.

NEW YORK WESTERN UNION.

Among the New York visitors recently, was Mrs. Nellie Dougherty Collins. Miss Dougherty began her career as a check girl in the 195 Broadway office in 1876. She soon afterwards graduated as a telegrapher and was for the subsequent ten years a first-class operator, when she resigned to get married. Miss Dougherty had the distinction of being the first lady operator to work in an exchange office, having been appointed to a position in the Produce Exchange, where she worked a wire with Mr. William Gibson, the champion operator. Mrs. Collins now lives at Sag Harbor, L. I. She made her visit to New York the occasion to call on many of her old friends.

Other visitors included Mr. H. Saxe, who works the Worcester, Mass., end of the New York local; Mr. J. F. Barry, manager and chief operator of the Duluth, Minn., board of trade office, and John B. Hurd, a former chief operator, now retired. Mr. Hurd renewed many old acquaintances and was much interested in the numerous new improvements made since his retirement from active service.

Returned from vacation, W. M. Morrissey, assistant chief operator.

Senator William L. Ives of New York, the dean of the telegraph profession, has gone to the central part of the state on his annual vacation. He will be absent about two months and will make his headquarters at Syracuse. After an active career as a telegrapher for over fifty years, the company retired the Senator on a pension three years ago.

T. B. Yarborough has returned to duty after recovering from a broken shoulder blade.

Martin Durivan has been assigned to his usual position of chief operator at West End, Long Branch, N. J., for the summer months.

On April 25 the chief operators of the downtown offices together with other division supervisors were the guests of chief operator, G. E. Palmer and his Morse supervisory force at 24 Walker Street, in a "get-together" conference, for the benefit of the service.

Manager W. A. Schudt of the Produce Exchange office, recently made a trip to Baltimore in the interests of the service.

Mr. J. P. Edwards, traffic superintendent, New York City, is visiting his old home at Atlanta, Ga. His fractured arm is almost entirely well.

During the last month a number of the old pensioners called and paid their respects to the division offices and met many of their old friends. These visits are being encouraged by the officials and are appreciated by the pensioners.

PHILADELPHIA WESTERN UNION.

The western Union Athletic Association held a meeting recently, at which fifty members were present and fifteen new members added. The object of the association, as announced by President E. A. Farnett, is the encouragement of games and sports of all kinds during the summer and winter months. Mr. J. H. Nugent, manager of the baseball team resigned, and Mr. E. J. Applegate was elected in his place. Mr. Samuel Duglin was elected business manager, and C. R. Makin was appointed musical director.

PHILADELPHIA POSTAL.

Among visitors during the past week were superintendents C. H. Ashburn, Richmond, Va.; F. W. Sprong, Cleveland, Ohio; H. Scrivens, Pittsburgh, Pa., and H. D. Reynolds, Buffalo, N. Y. A number of Postal managers were also among the callers.

Prizes will be offered for the most original costume take-off on comic characters, which will be a feature of the (Postal) Philadelphia Athletic Association outing to be held at Woodside Park, June 24. A picnic, field events, and a general good time will complete an interesting programme.

N. Broker was detailed from the main office to assist in handling the heavy business at Atlantic City last week.

R. E. Hartenstine and D. T. Gifford have been added to the main office force.

One of the most interesting features of the Electrical Aid ball, held April 27, was the presentation of a beautiful time piece to past president Alfred G. Strickland. The presentation was made by former president Andrew S. Weir on behalf of the members. Mr. Weir said: "Mr. Strickland, I am proud of the privilege accorded me to-night; you and I have been in the harness for a long time. Your burdens as president of this organization were greater than that of any of your predecessors, yet you met the conditions as they presented themselves without complaint, and they were quickly righted. The improvements you made soon bore fruit, as will be attested by the increase in membership and surplus accounts. In appreciation of your untiring efforts the members of the Electrical Aid Society of Philadelphia present to you, through me, this beautiful time piece. May it serve you as faithfully as you have served us." Mr. Strickland was much moved and it was a long time before he could compose himself. Finally he thanked his boys and girls, as he called them, for their appreciation of his efforts and said he would still try to do more. He stated there were others who worked equally as hard as he did.

INDIANAPOLIS POSTAL.

Mr. H. C. Huggins, chief clerk to Superintendent J. F. Looney, Indianapolis, has just returned from a tour of inspection in the northern part of the state and reports all offices in fine condition and all managers very optimistic in regard to the business outlook.

CHICAGO WESTERN UNION.

A. J. Mau, equipment supervisor at Chicago, has been appointed division supervisor of equipment of the Pacific Division with headquarters at San Francisco.

J. C. Buckels has been appointed equipment supervisor covering the states of Iowa and Missouri.

D. E. Merrill has been appointed equipment supervisor covering Indiana and Illinois.

M. F. Strider of the general manager's office has been transferred to a similar position in the office of M. T. Cook, general manager at San Francisco.

W. J. Roberts, manager at Rockford, Ill., at the third monthly meeting held recently spoke on "Preparedness" in business. Those present were given an opportunity to offer suggestions, all of which received due consideration. A luncheon was served.

Peter C. Stoneman, formerly a Morse supervisor at St. Paul has been transferred to Minneapolis in the capacity of monitor.

Conrad C. Kruse has been appointed monitor in the St. Paul office.

Operator Thomas Hutton of the St. Paul, Minn., office died recently. He graduated from the check force about five years ago.

PITTSBURGH WESTERN UNION.

Among recent appointments of managers in the Pittsburgh district are the following: Miss Ruth E. Egan at Carnegie, Pa., vice H. A. Kaufle, transferred; F. F. Reinese at Clarion, Pa., vice J. A. Determan, transferred; D. C. Crizer at Williamson, W. Va., vice R. A. MacMullin, transferred.

ATLANTA WESTERN UNION.

The Atlanta Telegraphers' Mutual Aid Association has been organized. Mr. B. B. Youmans is president, T. J. Baltzell, secretary and Mrs. M. P. Norman, treasurer. It has a membership of over 200.

J. C. Baird and C. A. Bowen recently gave interesting talks before the Telegraph Engineering Club.

A. J. Fletcher, at one time manager of the Memphis office, died April 4.

DENVER WESTERN UNION.

The E. M. F. Society gave its first informal dance at Cotillion Hall, Saturday evening, April 29. In spite of a bad snow storm that continued most of the day and evening, over one hundred couples were present. General Manager W. J. Lloyd, who recently completed fifty years of continuous service for the Western Union with the record of not one day of sickness in that time led the grand march, accompanied by Mrs. Lloyd, and executing this maneuver with a grace that was the envy of many a younger couple. The society was showered with congratulations upon the showing made, and many requests have been made for the staging of another dance in the near future.

Mr. T. P. Dudley, of the Denver automatic department is in Helena, Mont., subbing in like capacity for a few weeks.

Mr. H. H. Fisher, of the San Francisco plant department, was a recent visitor at Denver. His parents live on a farm near here.

Mr. J. E. Sterling is in Denver picking up the fine points of the multiplex from the local force. Mr. Sterling is a member of the automatic department at Omaha.

Mr. Barnard Cummings, of the Denver automatic department, is now in Newport News, Va., learning the fine art of aerial navigation. He is a first lieutenant in the Colorado National Guard, and was recently appointed by the governor of Colorado to go east and learn the art from experts at the Atlantic coast government training station.

The Denver-El Paso two channel multiplex is now in operation and proving a very satisfactory addition to our traffic moving facilities. The Chicago multiplex, a four channel affair, is all ready to start, and is expected to be in operation in a few days.

Mr. J. B. Colby, division wire chief and traffic supervisor, has just returned from a two weeks trip to Columbus and El Paso. He has acquired some decided views on the situation in Mexico.

A conference of Colorado managers was held here April 15 and 16 for the purpose of instructing them in the best methods of direct selling. Among those in attendance were: Managers, J. F. Reade, Denver; O. L. Michaels, Colorado Springs; W. F. Drake, Pueblo, Col.; J. H. Hill, Cheyenne; R. H. Outlaw, Laramie, Wyo.; John Dimmick, Greeley; B. G. Witherspoon, Sterling; Miss A. A. Hulse, Cripple Creek; Miss Margaret McAleer, Victor; Miss Ellen Doherty, Canon City; Miss E. E. Iving, Florence; Miss R. A. Woodward, Rocky Ford; Miss F. E. Lane, La Junta, and H. W. Fitton, Trinidad, Col.

ST. LOUIS WESTERN UNION.

John A. Bollato has been appointed manager of the Commercial News Department vice Charles E. Dubbs, promoted to solicitor.

J. W. Farley, C. L. Warren, J. C. Fallinger and R. L. Juda have returned from Jacksonville, Fla., where they had been detailed to assist in handling the season's traffic.

WASHINGTON, D. C., WESTERN UNION.

The automatic department of this office has been reorganized with the following assignments. Day—E. H. Fretwell, assistant chief operator, with the following assistants: Miss Evelyn Semser, New York multiplex; Miss Sue Darley, Chicago multiplex; Miss Mercedes SAGRANIO, Barclay and Morkrum; R. Lugenbeel, chief mechanic; assistants, H. W. Fewkes, Walter Runnells and Frank Smith; Miss Mae Rhoderick, instructress of automatic school. Night—James Poynton, M. Artz, assistant. J. L. Cutsail and Howard Switzer have been transferred from Morse to the automatic department as multiplex under-studies.

A meeting of the traffic department was held Friday afternoon, April 21. Among those present were division traffic superintendent, S. B. Haig and division traffic supervisor, W. E. Stimpson of New York, each of whom made a few remarks on the subject of "Efficiency."

INDIANAPOLIS WESTERN UNION.

The following appointments are announced: Garnett Maple, manager at Linton, vice J. A. Long, resigned; F. C. Newlin, manager, Attica, vice M. F. Beaver, resigned; Ivan Adams, manager, Salem, vice F. C. Newlin, transferred; E. J. Pruitt, manager, North Vernon, vice M. R. Crisman, who leaves the service; I. A. Defanbaugh, manager, Greenfield; F. L. Stewart, manager, New Castle, vice A. Sutton, resigned; R. M. Garrett, manager, Indiana Harbor, vice Miss I. W. Scharf, transferred to Vincennes.

Several meetings of the commercial forces were held here recently, managers and employes from various offices in this section being present. Division commercial agent McGrath and division cable manager Eldridge, and district commercial superintendent J. C. Nelson, also attended.

DALLAS, TEX., WESTERN UNION.

A meeting of the commercial employes of this office was held at the Rice Hotel recently. This was one of the many conferences that are being held in the Gulf division.

Mr. Miles Reese of the office of the division auditor at Dallas, has been transferred to the staff of district commercial superintendent, A. C. Terry at Pittsburgh, Pa.

Rubber Telegraph Key Knobs.

No operator who has had to use a hard key knob continuously should fail to possess one of these flexible rubber key caps, which fits snugly over the hard rubber key knob, forming an air cushion. They render the touch smooth and the manipulation of the key much easier. Price, fifteen cents. J. B. Taltavall, TELEGRAPH AND TELEPHONE AGE, 253 Broadway, New York.

Messrs. S. H. Burton and H. G. Klapp have been appointed monitors of premium circuits at Oklahoma City.

Among recent changes in managerships in this division are the following: I. Smith, transferred from Jonesboro to Blytheville, Ark.; F. S. Alexander appointed at Denton, Tex.; G. D. Stokes, transferred from Eunice, La., to Hugo; W. R. Puckett, operator at Baton Rouge, La., manager at Monroe, La.; J. L. Eggers from Donaldsonville, La., to Eunice, La. Mr. A. C. Harris has been appointed manager of the new independent office at Dewar, Okla.

WICHITA, KAN., WESTERN UNION.

A conference was held in this office April 19 and was attended by the managers of the principal offices in the district of Mr. C. B. Horton, district commercial Superintendent, of Omaha.

SALT LAKE CITY WESTERN UNION.

Mr. G. A. Naylor, stenographer in this office has been made assistant manager at Butte, Mont.

Mr. Hamilton Robertson has been appointed manager at Logan, Utah, to succeed Mr. E. J. Lackore who is now acting as relief manager during vacations.

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ASSOCIATIONS AND ORGANIZATIONS.

The Old Time Telegraphers and Historical Association, Andrew Carnegie, president; F. J. Scherrer, secretary, 30 Church St., New York. All Old Time Telegraphers who are eligible for membership are requested to send for application blanks. The next reunion will take place in New York City, September 26, 27 and 28.

Association of Railway Telegraph Superintendents, E. C. Keenan, president; P. W. Drew, 112 West Adams Street, Chicago, secretary and treasurer. Annual meeting St. Paul, Minn., June 20.

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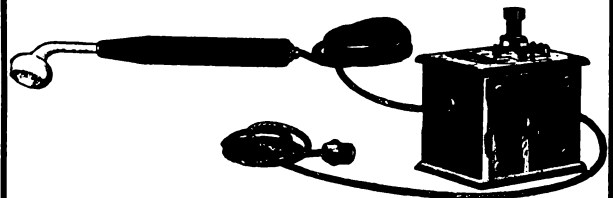
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BRIGHT, CHAS., F.R.S.E., M. Inst. C.E., M.I.E.E.—Submarine Telegraphs; 800 pages; \$25.

CROCKER, F. B., AND WHEELER, S. S.—The Management of Electrical Machinery. Fully illustrated. \$1.00.

CROTCH, ARTHUR.—Hughes and Baudot Telegraphs; 83 pages; 41 illustrations. This is a practical description of these two systems of telegraphy which are in extensive use in England and on the Continent; devoid of mathematics and technicalities; a timely book for American student telegraphers; \$1.00.

DODGE, G. M.—The Telegraph Instructor. This volume, now in its fourth edition, is admirably designed for the student and beginner, for in explanation and illustration it is clear and profuse; 260 pages; \$1.00.

FINN, WM.—The Barclay Printing Telegraph System; paper cover, new edition July, 1915, 50 cents. This work describes in detail the Barclay Printing Telegraph System.

HERBERT, T. E.—Electricity in its Application to Telegraphy. Adopted by the English Post Office Telegraph Department. Fourth edition, 48 illustrations; \$3.00.

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JONES, WILLIS H.—Pocket Edition of Diagrams and Complete Information for Telegraph Engineers and Students. This standard work was, in 1915, carefully revised and brought up to date, and includes full descriptions of the newest apparatus adopted by the Western Union and the Postal Telegraph companies. It presents the finest study of the telegraph ever published; it explains clearly the equipment of a modern telegraph office, and is a textbook that no student, operator, engineer or official can afford to be without; 64 chapters, 463 pages, 235 illustrations; \$2.00.

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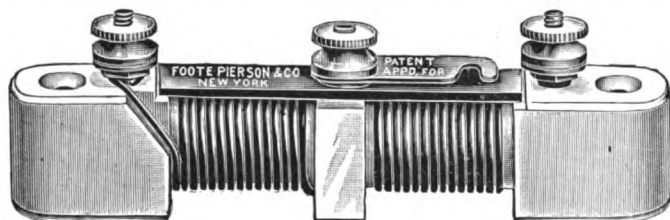
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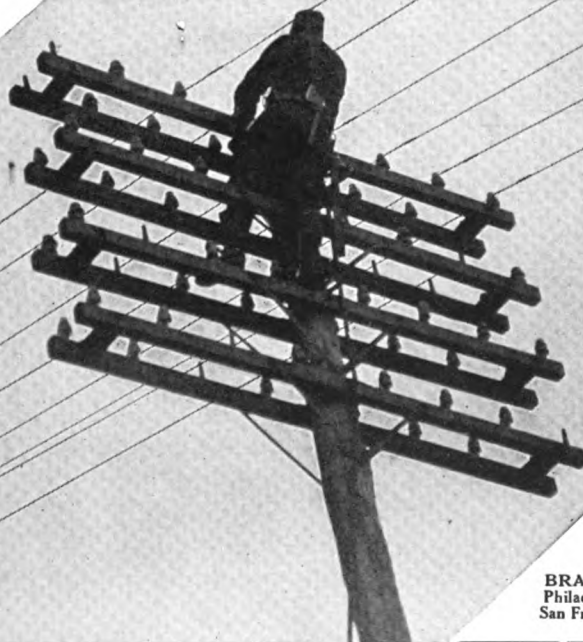
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No. 11.

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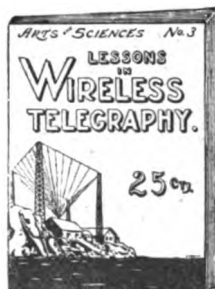
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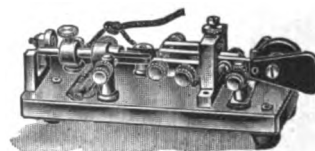
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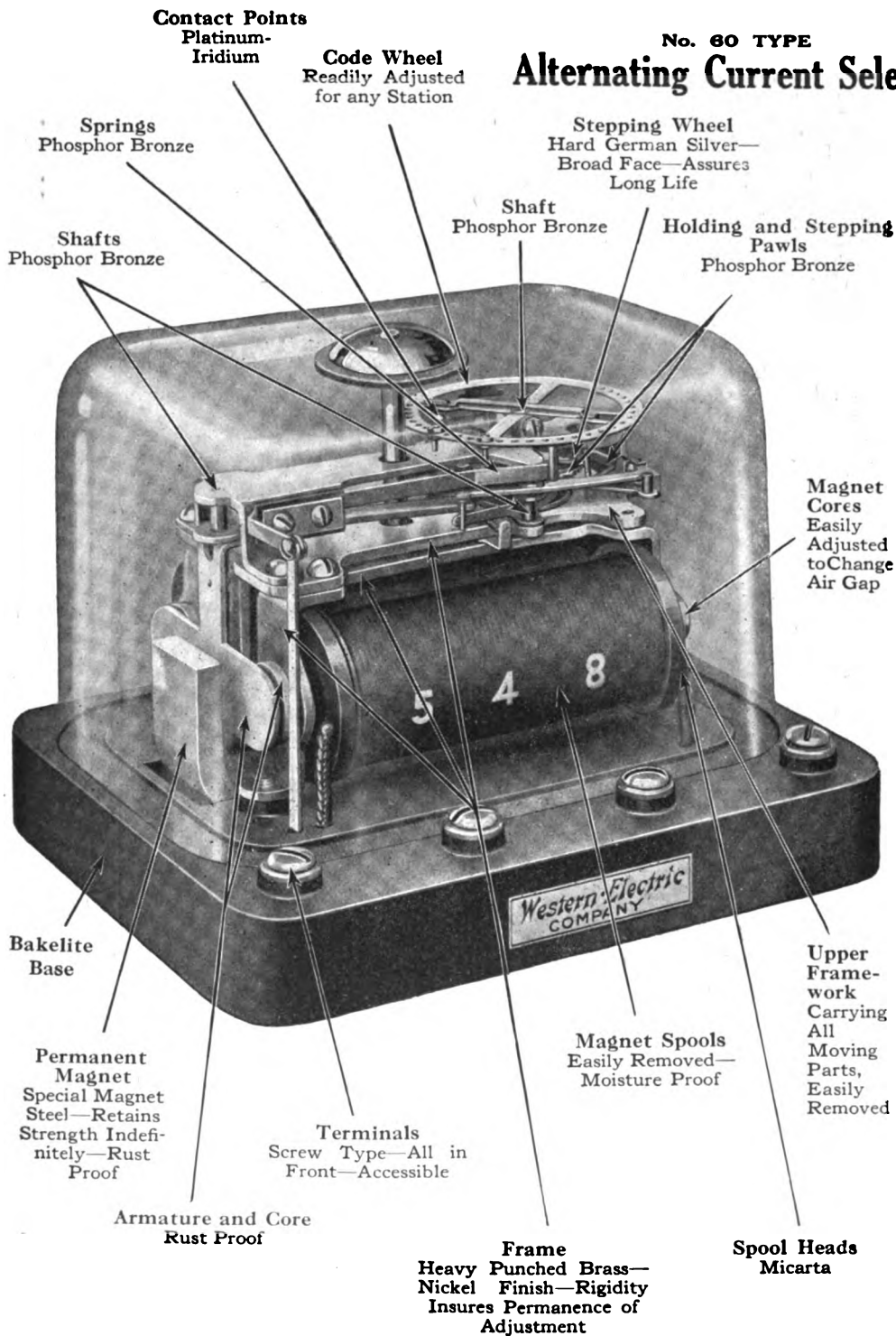
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No. 11.

NEW YORK, JUNE 1, 1916.

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Telegraph and Telephone Age

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NEW YORK, JUNE 1, 1916

CONTENTS.

Improved Conditions for Operators. Joint Meetings by Telephone.	245
Stock Quotations. Telegraph and Telephone Patents. Personal.	246
Postal Executive Office Notes. A Telegraph Man on Preparedness.	
Western Union Executive Office Notes.	247
Western Union Employees Benefit Fund. The Cable.	248
Canadian Notes. Telephone Statistics of Canada. The Telephone.	249
Medals Awarded to Messrs. Vail and Carty. L. B. McFarlane, President Bell Telephone Company of Canada. Radio Telegraphy.	250
Ohm's Law, By J. L. Edwards. Reunion of Military Telegraphers and Old Timers.	251
New Washington Office of the Postal Telegraph-Cable Company. By G. M. Foote.	252
Success. By John E. Burke.	253
Dinner to B. E. Sunny. A Lost Message.	254
American Institute of Electrical Engineers Hold Annual Meeting by Telephone. The Gulstad Vibrating Relay. Copper Wire.	255
Montana Court Procedure. Telephone Societies Hold Simultaneous Banquets by Telephone. Banquet of Leased Wire Telegraphers.	256
Efficiency Engineering in the Telegraph Service.	257
All Within a Century. Telegraph Receipts in China.	258
Handling of Bridge Polar Duplex. By C. J. McKee.	259
Conversation. By J. V. Riddick. Answers to Questions.	260
The Railroad. Running Trains by Smoke. Municipal Electricians. Obituary.	263
The Varley Loop Test.	264
The Spark Gap. The Menace of Gasoline. By J. B. Dillon.	265
Industrial. Gold and Stock Day. Letters from Our Agents.	266

Improved Conditions for Operators.

Never before has the operators' lot been so pleasant and favorable as it is in these days, and the tendency is for them to hold on to their positions because they are practically life positions. Operators need not now worry about their future, because that is assured them through the benefit provisions of the companies. Their positions are being made more attractive, and they will be loath to sacrifice what they now have for future uncertainties.

There is always a yearning in the youthful heart to better things but if conditions are so good now, and the operators are brought to realize that fact, there will be no need to resign in the hope of finding something better.

All of the benefits now enjoyed by operators are the result of harmony and confidence between employer and employe. Efficiency is a much-used word these days but it is one which indicates great possibilities. It is doing wonderful things for the telegraph business and for those who do the work, even to the lowest in rank. A natural tendency in carrying out the efficiency idea to its logical conclusion will no doubt be a division of the working forces in large offices into first, second, third and fourth classes. This is as it should be. A beginner of the lower classes has something to look forward to. After he has had sufficient experience he can rise through the various grades and then receive a salary that enables him to live in a manner in keeping with his station in life. Each class, of course, should have its own rate of pay, so that an operator entering the service knows that his compensation will be in advance, providing his record is good. If the first class operator receives \$100 or \$125 per month, the next promotion above that should be to become a chief operator or a supervisor, at an advanced rate of pay. Under present conditions all these things are possible and the operators should heartily cooperate with the companies in their efforts to improve general working conditions.

Joint Meetings by Telephone.

In this issue we record two instances of a new use for the long distance telephone, in holding joint meetings of organizations having members scattered all over the country in populous centres.

The American Institute of Electrical Engineers held a joint meeting of its members in six different cities, by telephone, on May 16. There was a notable gathering in New York and addresses were made by telephone to the members at the various points.

The second case was the meeting of the New York Telephone Society and affiliated bodies in other cities, on May 19. The proceedings and entertainment were shared by all alike in the different places. Distance, therefore, is no obstacle to a large attendance at any national gathering.

The national meeting of the American Institute of Electrical Engineers is, as far as we know, the first of the kind on record. It was no doubt conceived by the president of the organization whose authority in matters telephonic are practically absolute. The telephone is certainly revolutionizing methods of doing things in these rapid days, and is doing more in the line of conservation than any other agency.

Stock Quotations.

Following are the New York closing quotations of telegraph and telephone stocks on May 25:

American Telephone and Telegraph Co.	129 $\frac{3}{8}$
Macakay Companies	84 — 85 $\frac{1}{4}$
Mackay Companies, preferred	68 — 68 $\frac{1}{2}$
Marconi Wireless Tel. Co. of Am. (Par value, \$5.00)	33 $\frac{3}{8}$
Western Union	95 $\frac{1}{4}$

[This publication is prepared to purchase for its friends one or more shares of Western Union, Mackay, Marconi or any other stocks, either outright or on the installment plan. Remit \$10.00 per share as the initial payment if purchase is to be made on the installment plan. The stock will then be purchased at the market price and the balance due on the stock can be paid off at the rate of \$5.00 per month or in any other sum to suit the convenience of purchaser. In the meantime 6 per cent interest will be charged for the balance due on the stock. The purchaser, however, will have the benefit of the dividends, which, in many cases, will more than pay the interest charges. As soon as the stock is paid for, it will be registered in the purchaser's name and delivered to him. The commission charge on the purchase of stock is \$1.00 on transactions covering from one to eight shares. For eight or more shares the commission charge is 12 $\frac{1}{2}$ cents per share. In remitting to cover purchases of stock, name the price at which purchases are to be made.]

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1,181,559. Intercommunicating Selective Lock-out Telephone System. To F. W. Adsit, Minneapolis, Minn.

1,181,656. Pole Changer. To C. J. Erickson, Chicago, Ill.

1,181,708. Support and Guard for Telephone Wires. To G. W. Welch, Decorah, Iowa.

1,181,710. Telephone Receiver. To B. D. Willis, Chicago, Ill.

ISSUED MAY 9.

1,181,985. Receiver for Printing Telegraph Systems. To C. G. Ashley and E. T. Byshe, Chicago, Ill.

1,182,003. Signaling by Electromagnetic Waves. To R. A. Fessenden, Brant Rock, Mass.

1,182,029. Railway Telephone and Signal System. To G. E. Neel, Abilene, Tex.

1,182,138. Telephone Receiver Head Piece. To J. O. Bradley, New York.

1,182,179. Perforator for Forming Telegraphic Tape. To C. L. and H. L. Krum, Chicago, Ill.

1,182,301. Telegraphy. To G. Musso, New York.

1,182,726. Telephone Call Signal. To John J. Wetmore, Syracuse, N. Y.

1,182,744. Telephone Attachment. To C. E. Booker, Suffolk, Va.

1,182,843. Signaling. To R. A. Fessenden, Brookline, Mass.

1,182,849. Automatic Telegraphy. To J. W. Larish, New York.

PERSONAL.

MR. H. W. BAKHUIS, in charge of the telegraph office at Semarang, Dutch Indies, is spending an extended furlough at The Hague, Holland.

MR. T. COMMERFORD MARTIN and Stephen L. Coles are collaborating in the preparation of a book to be entitled "The Story of Electricity." Mr. Martin, an old-time telegrapher and journalist, is now secretary of the National Electric Light Association, New York.

MR. R. W. LEDWITH, a well-known old-time telegrapher of Chicago, and an author of ability, for some time past manager of the Postal Telegraph-Cable Company at Michigan City, Ind., has accepted a position in the editorial department of one of the Chicago daily papers.

MR. W. H. SAWYER, an old-time telegrapher, who some years ago retired from active business, has returned to Providence, R. I., from Pasadena, Cal., where he spends the winter months. Mr. Sawyer for over twenty-five years was identified with the insulated wire industry at Providence. In the late sixties and early seventies he was in the telegraph business in New York City.

MR. C. E. CASE, an old-time telegrapher and for seventeen years a train dispatcher on the Lake Shore and Michigan Southern Railway at Toledo, Ohio, and secretary and treasurer of the Train Dispatchers' Association of America from 1887 to 1893, is in the cigar and tin foil business at 4429 Berkeley Avenue, Chicago. Like most all other former telegraphers he has made good in his business enterprise, with which he has been identified for many years.

MR. EDGAR M. DEXTER, an old-time operator in Providence, R. I., president of E. M. Dexter & Co., stock brokers of that city, is an enthusiast on the subject of preparedness. The firm has issued a circular letter regarding a scheme of Mr. Dexter whereby those who have means instead of time and ability to take part in the preparedness campaign at Plattsburg, N. Y., may do their part by contributing to a fund to send men who would like to go but who have not the means. Mr. Dexter is doing his own share, by sending a man himself.

Advantages of a College Education.

Smith—Do you believe the colleges turn out the best men?

Jones—I certainly do. I was turned out in my freshman year.

A True Gentleman.

A man that's clean inside and outside: who neither looks up to the rich, nor down on the poor: who can lose without squealing: who can win without bragging: considerate to women, children and old people: who is too brave to lie: too generous to cheat, and too sensible to loaf: who takes his share of the world's goods and lets other people have theirs—this is the ideal conception of a true gentleman.

POSTAL TELEGRAPH-CABLE CO.**EXECUTIVE OFFICES.**

MR. G. H. USHER, general superintendent of the Southern Division, Atlanta, Ga., accompanied by Superintendent of Construction Price and Division Electrical Engineer Heard, was in New Orleans recently in connection with extending the company's underground facilities made necessary to meet the demands of increasing telegraph and long distance telephone business. Mr. G. H. Usher, with Superintendent C. H. Ashburn and Managers A. K. Akers, of Richmond, Va., and H. A. Lanier, of Norfolk, were recent New York visitors. While here they attended the Magnetic Club dinner at the Hotel McAlpin.

MR. CHARLES M. BAKER, general superintendent of plant, Western Division, Postal Telegraph-Cable Company, Chicago, Ill., was a recent New York business visitor.

MR. C. F. LEONARD, superintendent, New York, made a trip of inspection of the Connecticut offices in his district last week.

MR. J. E. RIGGS, former chief operator and wire chief at Grand Rapids, Mich., has been appointed manager at Port Huron, Mich., vice D. J. Stephenson, who has resigned to go into the electrical business. Mr. Stephenson was in the Postal Company's service thirty years.

MANAGERS APPOINTED.—Wm. H. Martin at Marseilles, Ill.; James D. Bradley, Geneva, N. Y.; E. W. Smoak, Portsmouth, Va.; W. B. Stuart, Charlotte, N. C.; Philip J. Frawley, Bradford, Pa.

A Telegraph Man on Preparedness.

Mr. Charles P. Bruch, vice-president of the Postal Telegraph-Cable Company and president of the Ohio Society of New York, made an address before a recent meeting of the Ohio Society of Maryland, at Baltimore, in which he made some excellent remarks on "preparedness."

"It seems to me," he said, "that right now—not next year or the year after, but right now—it is the bounden duty of every good American to support our government in all measures for ample preparedness for defense against wrong, attempted either within or without our borders. More than that, it is our duty to urge—to demand—that the government devise and carry out such measures without delay.

"We must do more than to talk about it; something more than to make a big noise, else we shall be like the little steamboat that Lincoln used to tell about: She had a six-foot boiler and a twelve-foot whistle, and every time she blew her whistle she stopped.

"If our great-grandfathers in Ohio had not built strong walls to their homes; if they had not carried loaded rifles when they plowed on weekdays and went to church on Sundays; if they had not fought off the savages who tried to plunder their storehouses; to misuse their women and to scalp their children, there would be no Ohio for us to be proud of today.

"I certainly am not going to start a fight, I don't

want to fight, but if savages attacked me, I'd be afraid not to fight.

"Do you leave your doors and windows unlocked and wide open, trusting that no burglar, no thug, will be tempted to take the watch that your father gave you, and your scarf pin, and your wife's wedding and engagement rings? Do you believe that if he does come after them you can divert him from his purpose by singing 'Scatter Seeds of Kindness?' Of course, you don't!

"There's a 'cop' on your corner, and you're paying a private watchman, and you don't entirely depend on them. You lock up the house every night, and maybe you have a pistol handy under your pillow.

"Gentlemen: Our forefathers gained and bequeathed to us freedom. If we, in our turn, do not do our duty; if we, in our turn, are not ready to resist attempted wrong; if we are not prepared to resist with force when attacked with force, we may have nothing to bequeath to our children."

WESTERN UNION TELEGRAPH CO.**EXECUTIVE OFFICES.**

MR. NEWCOMB CARLTON, president, expects to be in Chicago June 7, to remain during the national Republican Convention.

MR. A. G. SAYLOR, general manager, and W. A. Sawyer, commercial superintendent, New York, visited over twenty-five independent Western Union offices in southern New Jersey last week. They made the trip in an automobile which enabled them to cover a great deal of territory in a short time.

MR. W. K. VANDERBILT, JR., has been elected a member of the board of directors of this company.

MESSRS. W. N. FASHBAUGH, vice-president in charge of traffic, and J. J. Welch, traffic engineer, will be in Chicago and St. Louis during the National Republican and Democratic conventions in those cities, June 7 and June 14 respectively.

MESSRS. E. HARVEY AND L. V. SCHUNDNER of the plant engineer's office have left for Dallas, Tex., to assist in work in the Gulf Division. Mr. Harvey will be there for about two months, while Mr. Schundner will be permanently located in the Gulf Division plant department.

MR. P. J. HOWE of the plant engineer's office has been in Iowa City, Iowa, attending a conference of the engineers appointed by the Iowa Railway Commission to consider the question of induction on telegraph and telephone circuits caused by high tension transmission lines. On the way back to New York Mr. Howe spent several days on plant matters in the Western Division at Chicago.

MR. A. C. KAUFMAN, general commercial agent, New York, gave a talk on "The Telegraph as Applied to Modern Business," at a luncheon of the Rotary Club in Providence, R. I., May 9.

MR. J. S. SCHLOEMER, assistant manager, St. Joseph, Mo., delivered a lecture on "The Romance of the Telegraph and Cable" at the luncheon of the Commerce Club in that city May 3.

THE TELEPHONE AND TELEGRAPH BUILDING is the name given the new structure at 195 Broadway.

THE WESTERN UNION BOWLING ASSOCIATION of New York held a dinner at the Hotel McAlpin Monday evening, May 8, at which there were about 150 persons present. Mr. W. C. Merly, president of the club, acted as toastmaster. Mr. Newcomb Carlton made an address and presented the prizes won by the teams. Mr. J. W. Connolly, vice-president, spoke on the association. The dinner was followed by a cabaret entertainment.

THE AMERICAN DISTRICT TELEGRAPH COMPANY, in its report on the sprinkler supervisory system, shows that it has 2,056 buildings equipped with the system throughout the United States. This system gives added fire and water protection in plants.

MEETING IN NEWARK.—A meeting of the managers of group No. 1, first district offices, was held in Newark, N. J., May 19, Mr. W. A. Sawyer, district commercial superintendent, of New York, presiding. New thought salesmanship was the principal topic of discussion, with demonstrations by managers. Other subjects along general lines were also discussed. Those present were: Geo. Hunt, solicitor, Newark, N. J.; J. J. McGinn, solicitor, New York; C. R. Zacharias, special agent, Asbury Park; J. M. Creamer, division traffic supervisor, G. O. Bentz and J. E. Mendelson, commercial agents, and J. Simmonds, division commercial agent, New York. The following managers were also in attendance: G. K. Wilkins, Asbury Park, N. J.; A. J. Collier, Bridgeport, Conn.; Mrs. A. E. Smith, Cornwall-on-Hudson, N. Y.; W. A. Sellers, Dover, N. J.; J. D. Felsenheld, Elizabeth, N. J.; H. H. Puff, Ellenville, N. Y.; Mrs. N. W. Young, Greenport, N. Y.; F. C. Fraser, Hoboken, N. J.; H. Kramer, Jersey City, N. J.; Miss Rose Klein, Kingston, N. Y.; C. L. Hollywood, Long Branch, N. J.; G. M. Shamalia, Lambertville, N. J.; Harvey Johnson, Lakewood, N. J.; Miss R. E. Daniels, Middletown, N. Y.; N. C. Pastrof, Montclair, N. J.; Mrs. G. B. K. Linder (acting manager), Morristown, N. J.; M. M. Levitt, New Rochelle, N. Y.; A. W. Peterson, Newburgh, N. Y.; W. H. Spry, Newark, N. J.; J. S. Fowler, New Brunswick, N. J.; Mrs. S. F. Beatty, Ossining, N. Y.; Miss Mary Fletcher (operator), Ossining, N. Y.; E. B. Davis, Orange, N. J.; Geo. H. Card, Poughkeepsie, N. Y.; H. Van Sicklen, Patchogue, N. Y.; Mrs. C. W. Dare, Port Jefferson, N. Y.; R. W. Aldrich, Plainfield, N. J.; D. L. Doran, Paterson, N. J.; A. McPhail, Red Bank, N. J.; L. R. Pitkin, Richmond Hill, N. Y.; H. D. Schatzman, Southampton, N. Y.; R. R. Marchres, Sharon, Conn.; C. M. Fulton, St. George, N. Y.; M. Camelli, Union Hill, N. J.; C. D. Seaman, White Plains, N. Y.; S. P. Stevenson, Yonkers, N. Y.

Western Union Employees' Benefit Fund.

The Employees' Benefit Fund Committee of the Western Union Telegraph Company has issued a report of the administration of the fund for the

year 1915. It shows that the number of persons on the pension roll January 1, 1916, was 465; 374 men and 91 women.

Seven hundred accidents were reported during the year, and 1,346 cases of sickness.

"A striking and important result of the sickness provisions," says the report, "is the opportunity afforded for the treatment of certain maladies, frequently of long standing, which are benefited only by proper observation and care in a hospital or sanatorium, or by surgical assistance. In many instances employes have been aware of the urgent need of such treatment, but, prior to the establishment of the fund, they were unable, chiefly for financial reasons, to spare the time for the purpose. Cases of this character have also been detected by the close observation of the company's medical representatives and trained nurses.

"This is in fact a mutual insurance fund; mutual, even though its success and moral standing are in the hands of those to be benefited. Therefore it is the duty and to the interest of every employe to see that no one receives a benefit who is not entitled to it. To be more explicit, what is known as 'ma-lingering' or feigning illness is not only a wholly dishonorable practice, but one which every employe should condemn. It is with regret that the committee records that the company has found it necessary to deal severely with several employes who were found to be imposing upon the fund. On the other hand, it is a pleasure to record that with but few exceptions employes returned to work with commendable promptness after recovering from their illnesses."

There were sixteen deaths from accidents and seventy-three deaths from natural causes during 1915.

The amount disbursed for pensions during the year 1915 was \$215,081.66; accident disability benefits and expenses, \$46,172.27; sickness disability benefits, \$110,733.21; death benefits, \$72,686.67; state insurance, \$2,427.64; total \$447,101.45.

The company made an additional contribution of \$416,324.02 to restore the fund, which was \$1,000,000 on December 31, 1915.

The Employees' Benefit Fund Committee consists of A. R. Brewer, chairman; F. D. Giles, Wm. Holmes, F. J. McLain, Lewis McKisick, and F. T. Albert, secretary.

THE CABLE.

MR. J. G. MURRAY has been appointed traffic manager of the entire system of the Central and South American Telegraph Company, with headquarters at 64 Broad Street, New York.

AUTHORIZED CODES may be used in cablegrams to the Azores Islands and to Portuguese colonies, including Macao.

LEGAL TIME ADVANCED.—Until September 30, the legal time is advanced one hour in the following countries: Great Britain and Norway, from May 21; Denmark and Sweden, May 15; Germany, Holland, Hungary and Austria, May 1; Luxembourg, May 22.

Cable Interruptions.

Interruptions to submarine telegraph cables are reported to May 25 as follows:

Azores and Emden (two cables), August 5; Shanghai and Tsingtau, and Tsingtau and Cheefoo, August 24; Sweden and Germany, September 30; Almeria and Melilla, October 1; Penogomera and Alhucempas (defective cable), October 1; Yap and Menado (offices closed) October 7; Obock and Djibouti, November 6; Constantinople and Tenedos, November 6, 1914; Greece and Crete, May 9, 1916; Nagasaki and Tamsui, May 15, 1916.

CABLE TESTING.—An excellent book for cable operators is "Beginners' Manual of Submarine Cable Testing and Working," by G. M. Baines. The author is a practical cable man, and has written his book in clear language for the benefit of beginners and students. It is also of value to cable electricians. The price is \$3.50 per copy. For sale by TELEGRAPH AND TELEPHONE AGE, 253 Broadway, New York.

CANADIAN NOTES.

CRIPPLED SOLDIERS AS MESSENGERS.—It is stated that telegraph companies in several of the Canadian provinces are employing crippled soldiers as messenger boys. Able bodied boys for this work are very scarce on account of the demands of military service.

Telephone Statistics of Canada.

The following table shows the capitalization, cost, revenue, operating expenses, and other data connected with the telephone interests of Canada for 1914 and 1915:

Items.	1914	1915
Capitalization	\$70,291,884	\$74,284,991
Cost	\$80,258,356	\$83,792,583
Revenue	\$17,297,268	\$17,601,672
Operating expenses	\$12,882,402	\$12,836,715
Remuneration	\$8,250,253	\$8,357,029
Number of telephone companies	1,136	1,396
Wire mileage	1,343,090	1,452,360
Telephones	521,144	533,090
Employees	16,799	15,072
Persons per telephone...	15.5	15.1
Persons per mile of wire,	6.0	5.6

Telephone companies' net earnings, as represented by the difference between total receipts and operating cost, were \$4,764,957. This was better by \$350,091 than the result for 1914.

In Manitoba and Alberta practically all telephone interests are in the hands of the local governments. In Saskatchewan the provincial government operates in all the large centers, but has not taken over the 520 small units that spread their wires over the rural sections of the province.

HOME-GROWN POLES IN ENGLAND.—The subject of the potentialities of the United Kingdom in the matter of production of telegraph and telephone poles is receiving some attention at the present time.

THE TELEPHONE.

MR. THEO. N. VAIL, president American Telephone and Telegraph Company, who recently returned from Guatemala where he passed several weeks, speaks highly of that country. He states that it is an ideal country for young men to make a start in life—"men who want to begin independently in a small way, and by industry, intelligence and honesty achieve a success that will be theirs and the country's."

GOUVERNEUR CALHOUN, aged forty-seven years, commercial superintendent of the American Telephone and Telegraph Company, at St. Louis, Mo., died in that city May 15. He was closely identified with long distance telephone development in the west. As superintendent at Cincinnati the lines in his district were extended to St. Louis in June 1896. He moved to St. Louis in 1898. His territory was probably the largest ever embraced under one superintendent in either the telephone or telegraph field. Under the reorganization Mr. Calhoun became commercial superintendent, which position he held up to the time of his death. He was a graduate of Yale and an enthusiast in athletics.

SOUTHWESTERN LEGAL APPOINTMENTS.—Mr. S. P. English has been appointed general attorney for the Southwestern Telegraph and Telephone Company, at Dallas, Tex., and Mr. W. S. Bramlett solicitor. Other appointments are Francis W. Wozencraft and J. D. Frank assistant general attorneys, and Mr. C. M. Means, attorney, all with headquarters at Dallas. Mr. English is a son of Mr. S. M. English, general manager, Gulf Division, Western Union Telegraph Company.

LONG DISTANCE MEMORY.—In a recent contest of telephone operators to see who could remember the most numbers one of the women correctly called off the names of 1,032 firms with their telephone numbers.

TELEPHONE PIONEERS' CONVENTION.—The convention of the Telephone Pioneers of America will be held at Atlanta, Ga., October 19 and October 20. Mr. R. H. Starrett, 15 Dey Street, New York, is secretary.

THE BOSTON PLANT CHAPTER, Telephone and Telegraph Society of New England, held its regular meeting May 25. Mr. E. K. Hall, vice-president, New England Telephone and Telegraph Company, made an address on "The Line and Staff of the Telephone Army." Mr. Gordon S. Wallace, 125 Milk Street, Boston, is secretary.

DYE SHORTAGE FELT IN TELEPHONE INDUSTRY.—The shortage of dyes, which in ordinary times come from Germany, affects the telephone business to some extent. The pair of jumper wires used on the main frame formerly consisted of one white and one red cord; but from now on they will consist of one white cord and one white cord with a couple of red threads in it.

Advantages of Stock Subscription Plan.

A telephone employe who subscribed for four shares of American Telephone and Telegraph stock last year at \$110, recently said that his wife strenu-

ously objected on the ground that they could not do without the \$8 a month which would be deducted from his salary. By the practice of a little more frugality and economy, however, the payments have been kept up, with the result that on February 29, 1916, he had paid in \$96, received \$32 in dividends, had interest deducted, \$15.28, and a balance to his credit of \$112.72. His wife is now as enthusiastic over it as he is, and says it is the first money they have ever saved; and he added that he goes about his work now with an interest and with an eye to saving the company money, greater than he had ever felt before in the years that he has been with the company.

This investment in four shares of the company's stock calling for a total outlay of \$353.16 will return in dividends \$32 per year so long as the company continues to pay its present rate of dividend, and these dividends at compound interest will equal the principal in less than ten years.

Medals Awarded to Mr. Vail and Mr. Carty by the Franklin Institute.

Mr. Theo. N. Vail, president of the American Telephone and Telegraph Company, was awarded the Elliott Cresson medal at a meeting of the Franklin Institute in Philadelphia, May 17, and Mr. J. J. Carty, chief engineer of the company, was at the same meeting presented with the Franklin medal.

The award to Mr. Carty was in recognition of "long continued activities in the telephone service, his important and varied contributions to the telephone art, and his signal success in directing the efforts of a large staff of engineers and scientists to the accomplishment of telephonic transmission of speech over vast distances."

Demonstrations of talking by wireless with the navy department at Washington and by wire with Chicago, Omaha, Denver, Cheyenne, Salt Lake City, and San Francisco followed the presentations. Then the audience saw and heard Thomas A. Watson, an associate of Dr. Bell in the invention of the telephone, tell in talking motion pictures the story of the telephone's birth. Mr. Watson was present.

L. B. McFarlane, President Bell Telephone Company of Canada, an Old Operator.

One often hears that opportunities for advancement that prevailed some years ago do not exist at the present time. There is no more truth in that than there is in the statement that business in general has stopped expanding, and that we have got to the end of everything. In reality there is greater opportunity today for advancement than there ever has been, and the young men of this generation can well afford to study the causes that led many former telegraphers to the attainment of the high positions they now occupy, and profit by it.

One of those who formerly followed the key but who by diligence, has risen to the top ranks in the telephone business, is Mr. L. B. McFarlane, president of the Bell Telephone Company of Canada, at Montreal, Que.

Mr. McFarlane was born in Montreal, September

8, 1851, and entered the telegraph service in that city September 13, 1865, as messenger for the Montreal Telegraph Company. He afterward became a clerk and finally an operator for the same company. Leaving Montreal he became manager at Prescott, Ont., and then he turned his attention to the "States" for further glory. He entered the Western



L. B. MCFARLANE

Union service as operator at Detroit, Mich., and afterward went to New Orleans and Nashville for the same company. Returning to Canada he became chief operator at Hamilton, Ont., for the Dominion Telegraph Company, and his advancement thenceforth was rapid. He became manager at London and Toronto, and later assistant to the general manager. His next position was that of travelling auditor for the same company, and finally superintendent of the telephone department.

Mr. McFarlane then embarked in the telephone business as manager of the eastern department of the Bell Telephone Company of Canada, and was successively appointed general superintendent, general manager and managing director, finally becoming president of these large interests.

Mr. McFarlane is one of the most prominent telephone officials on the American continent today, and is looked upon as one of the leaders in that great industry. He is a director of the Maritime Telephone and Telegraph Company of Nova Scotia, the New Brunswick Telephone Company, the Northern Electric Company, and the North American Telegraph Company.

RADIO TELEGRAPHY.

Marconi Notes.

Mr. R. A. Weagant, chief engineer, has returned from a protracted trip to the Pacific Coast.

Mr. C. H. Taylor, engineer, Trans-oceanic Division, and J. de Jara Almonte, special agent, sailed for England on the steamer "Kroonland," May 17. Mr. Taylor recently returned from Hawaii, where he spent several months conducting tests with the Japanese government station at Funabashi.

Mr. A. E. Reoch, engineer, Canadian Marconi Company, was a recent visitor in New York.

PRESIDENT WILSON opened the Philadelphia To-day and Tomorrow Civic Exposition by wireless May 15.

WIRELESS FOR NEW YORK POLICE.—A wireless telegraph apparatus capable of sending a distance of 500 miles is being installed at Police Headquarters in New York City under the supervision of Inspector Michael J. Brennan, superintendent of the telegraph bureau. The apparatus was donated by the Marconi Wireless Telegraph Company.

WIRELESS ON HUDSON RIVER BOATS.—The Hudson Navigation Company has equipped its steamers "C. W. Morse" and "Berkshire" with Marconi wireless apparatus. The company has already installed land stations in New York, Poughkeepsie, and Albany. Uniformed women operators will be employed.

New Wireless Book.

Wireless Transmission of Photographs is the title of a new book just issued by the Wireless Press, London, the author being Marcus J. Martin.

Those who desire to experiment in the transmission of photographs, drawings, etc., from one place to another without the aid of artificial conductors will find this work of value. It tells what has been done along this line and will enable the experimenter to proceed with confidence. It seems a little early, perhaps, to write a book on a subject so little known, but this work will have the merit of being a leader in its field, for it is the only one of the kind that we know of.

An idea of the scope of the book may be obtained from the list of contents by chapters.

Chapter I tells of early experiments; II, transmitting apparatus; III, receiving apparatus; IV, synchronizing and driving; V, the "Telephograph." Two appendices treat of selenium cells and preparing the metal prints.

The price of this book, which has 114 pages and 62 illustrations, is \$1.00 per copy.

Copies may be obtained of TELEGRAPH AND TELEPHONE AGE, 253 Broadway, New York.

Ohm's Law.

BY J. L. EDWARDS, COLLINGSWOOD, N. J.

The correspondence in the columns of your paper on "Ohm's Law" suggest the question: Why is it necessary to employ two sets of terms, having identical meanings, in the operations of Ohm's Law?

In this age of efficiency would it not serve economy to use in the formulæ the terms into which the three operations are resolved, substituting voltage, ohmage and amperage for electromotive force, resistance and current, adopting the initial letters V. O. A. instead of E. R. C.?

To the gentlemen with short memories, they only have to remember that Mr. Volta just sits still while Messrs. Ohm and Ampere take turns in dividing him up to find their respective values, and when they wish to know what Mr. Volta is worth they simply multiply themselves into each other, and there they have it all.

[Mr. Edwards' suggestion is one that could not be taken seriously one moment by electrical engineers. In the articles he refers to *C* was used to represent current, but that use of the letter is antiquated. *C* used to be the accepted symbol for current, but *I* has been substituted for it by the American Institute of Electrical Engineers, and other scientific bodies, and the *C* now stands for capacity. The reason *C* was used in the articles referred to by Mr. Edwards was because they had a special significance apart from their symbolic meaning. The suggestion to adopt the symbols *V. O. A.* for *E. R. C.* would be very confusing because the words pressure, electromotive force, etc., are frequently used instead of "voltage"; "megohms," etc., for "ohms," and "milliamperes," etc., in place of "amperes." The use of such derivations would destroy the meaning of the symbols. *E. I. R.* are the accepted symbols for electromotive-force, current and resistance, respectively, the world over, and the less they are tampered with the better.—Editor.]

Reunion of Military Telegraphers and Old Timers.

President William Bender Wilson of the Society of the United States Military Telegraph Corps, which will hold its next annual reunion in New York, September 26-28, in conjunction with the meeting of the Old-Time Telegraphers and Historical Association, has appointed the following as members of the reception committee: Charles A. Tinker, chairman; Henry H. Atwater, David Homer Bates, Jr., Charles P. Bruch, Albert B. Chandler, Jesse W. Crouse, Henry W. Dealy, J. Clendenin Eckert, J. Clendenin Eckert, Jr., Douw H. Fonda, Richard Graham, George B. Hatter, O. C. Hatton, William L. Ives, Verdie J. Knittle, Isaiah D. Maize, Edwin R. Maize, Albert W. Orton, Charles W. Pearson, Charles O. Rowe, H. P. Royce, Charles D. Ryan, E. Alex. Scott, Frank A. Stumm, Arthur L. Tinker, John Wintrup.

The programme of the proceedings of the reunion of the two bodies has been issued.

The business meeting of the Old Time Telegraphers and Historical Association will take place at the Hotel McAlpin on Tuesday morning, September 26, at ten o'clock. Upon adjournment of this meeting the Society of the United States Military Telegraph Corps will convene for the transaction of its business. The banquet will be given at the same hotel on Thursday evening, September 28. The remainder of the programme for the entertainment of the visitors will be announced at the time of the reunion.

HANDY POCKET DICTIONARY.—The Excelsior Webster Dictionary is a very handy little book, vest pocket size. It has a margin index which greatly facilitates the finding of a word, and it contains much information of a general and practical character besides. Every one should have a copy either in the pocket or on the desk, where it can be instantly referred to. Price, 50 cents per copy. For sale by TELEGRAPH AND TELEPHONE AGE, 253 Broadway, New York.

New Washington Office of the Postal Telegraph Cable Company.

BY G. M. FOOTE.

The Washington office of the Postal Telegraph-Cable Company was moved into new quarters in the Evans Building, on New York Avenue, Saturday night, April 16, and the transfer was accomplished without interruption to service. The Evans Building is a modern nine-story fireproof office building located on New York Avenue near Fifteenth Street, in the heart of the new business section of the city.

The business office is located on the street floor adjoining the main entrance to the building. The dividing partition has been torn out to provide access to the office through the lobby of the build-

ing. About 3,000 square feet of floor space is used by the operating department where every known convenience and device for the rapid handling of telegraphic traffic and the comfort of employees has been installed.

The main feature of the operating department is the new concentration board located near the middle of the room, dividing the switchboard and repeaters from the operating tables. Every operating table connects with the concentration board. Small red lights on the front of the board indicate to the attendant when a call is made and similar white lights indicate idle operators who can be connected to any wire in the office without leaving their seats. This is a great convenience and one much appreciated by the operators.

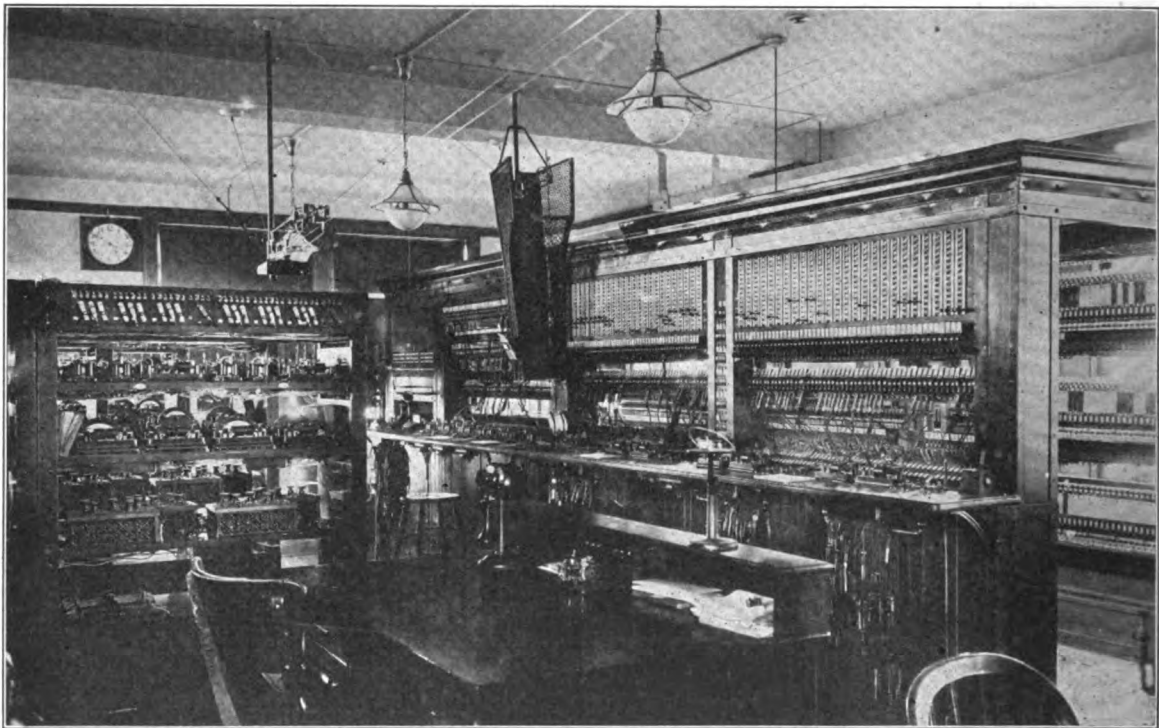


FIG 1—A VIEW IN THE OPERATING DEPARTMENT.

ing. A handsome marble counter has been placed across the front of the office and the walls are finished in marble to correspond with the interior decoration of the building, which is the handsomest in the city. The manager's quarters are finished in mahogany, and occupy about one-half of the business office, with a private entrance leading from one of the main hallways. The delivery and telephone department is in a large room at the end of the main hall adjoining the manager's office, and can be reached through entrances leading either to G Street or New York Avenue.

A large portion of the basement floor is used as headquarters for the construction department, messengers' lockers, shower baths and storage rooms for supplies and materials.

Practically the entire sixth floor of the building is occupied by the operating and bookkeeping departments, with rest and locker rooms for em-

There are about seventy-five sittings in the room and each is so arranged that it can be used duplex or single. Operating tables built of skeleton steel frames with heavy oak tops have been arranged in rows parallel with the concentration board. Between each row of tables is a passage for the use of chiefs and checks so that operators can be approached from the front unobstructed by chairs, which latter occupy separate aisles. An elevated shelf five inches wide supported by steel standards has been placed about fourteen inches over the rear of each row of tables. This shelf is used for holding blanks, switches and a small electric lamp connected with the concentration board which shows the traffic chiefs at a glance when any operator is not engaged so that he can be used when necessary upon other work.

Carriers of the kick-back pattern have been installed for the rapid movement of traffic between the different sections of the room and pneumatic

tubes of the latest model have been erected for quick service between the operating room, delivery department and business office on the ground floor.

Electric clocks of the synchronous type have been placed at short intervals throughout the operating room so that operators can readily see the time at a glance from any angle. These clocks are also connected with all other departments so that uniform time is maintained throughout the plant, a very desirable feature in a big telegraph office.

The main switchboard consisting of four fifty-wire panels is located in one end of the room, with the power plant, comprising nine motor-generators and an improved power board close by. In front of the main switchboard are located twenty-three repeater racks supporting all repeaters and multiplex apparatus. Telephones connecting all departments

work which has covered a period of over four months.

Mr. D. H. Gage, Jr., of Mr. O'Donohue's staff, had direct charge of the work, and was assisted by Messrs. K. L. Vernon, F. E. Reynolds, J. E. McLaughlin, George Dixon and F. D. Bourke.

The local staff at Washington consists of Mr. G. Manson Foote, manager; Mr. Edwin Smith, cashier; Mr. E. Y. Simmons, chief delivery department; Miss Emma Castella, chief bookkeeping department, and James J. Minor, foreman of construction. The operating department is in charge of Mr. Charles F. Thompson, chief operator; Mr. James P. Gooch, night chief; Mr. E. H. Bass, all-night chief; Messrs. A. H. Mitchell, M. J. Kain and F. N. Webber, traffic chiefs; W. C. Hospital, J. G. Trunnell, A. L. Townsend, and Morris Fox, wire chiefs.

Success

BY JOHN E. BURKE, NEW YORK.

Success depends wholly upon one's own efforts. As an athlete trains for a race so must we prepare for the struggle upon which our very existence depends.

"Preparedness" is everything. The time will come when one will be called upon to do something out of the routine of daily duty, no matter what position in life. Will this "emergency call" find you wide awake and on your tip-toes, or will you back down and admit defeat?

There come crises in every man's life which demand clear thinking and prompt action, that can be obtained only by early and careful training, both physical and mental, from early manhood and even boyhood.

In the ages long ago the Greeks, Romans and Spartans knew the value of physical fitness. As the human race progressed it was seen that bright men were not always born bright, and that our greatest geniuses were often "self-made" men. Therefore, it dawned on man that by careful preparation, and mental gymnastics, we could improve our brains, and exercise them as we could any other part of our bodies.

In all walks of life it is "the survival of the fittest." One man's gain is another's loss. Which do you want to be, the victor or the vanquished?

Anything you consider worth your while, is worth working for. Remember if you do not succeed, somebody else will. If we did not suffer in this world there would be no happiness, and without happiness for a reward, no matter how transient it is, we would not work. Therefore, we should exercise our mightiest of weapons, our brains, and to keep them in working order we should be in perfect physical condition to win success.

Mr. W. S. Scott, accountant of the Western Union Telegraph Company, London, England, in remitting to cover his subscription for another year writes: "I look forward in pleasant anticipation to the semi-monthly arrival of TELEGRAPH AND TELEPHONE AGE. It brings information we would not otherwise receive."



FIG. 2—MAIN ENTRANCE TO BUSINESS OFFICE.

for intercommunication as well as outside connections have been installed.

Much attention has been given to the lighting problem in the operating room and a successful solution seems to have been found in the use of the semi-direct system using individual 75-watt nitrogen lamps suspended from the ceiling by chains at intervals of about fifteen feet. There is an abundance of illumination without shadow or glare which has received much favorable comment from employees who work at night.

The equipment throughout is the very latest development of engineering progress and has been aptly described as the "last gasp" in the art of telegraphic development.

The new office was planned by Mr. J. P. O'Donohue, division electrical engineer, of New York, who is responsible for the thorough and efficient layout. Mr. O'Donohue has kept in close touch with the

Dinner to B. E. Sunny.

The crystal ball room of the Blackstone Hotel in Chicago was the scene of a notable gathering on Monday night, May 22, when a number of personal friends of Mr. Bernard E. Sunny, president of the Central Group of Bell Telephone Companies, assembled to celebrate the sixtieth anniversary of his birth. The banquet hall had been transformed into a veritable garden of spring flowers and presented a brilliant and beautiful scene.

Among those present were the presidents of the American Telephone & Telegraph Company, the General Electric Company, the Commonwealth Edison Company, the Westinghouse Company, together with leading bankers, manufacturers, merchants, distinguished members of the bar, the clergy and the medical professions, scientists, publishers,



B. E. SUNNY.

and men who have won fame and fortune in practically every walk of life.

Judge Charles S. Cutting was the toastmaster, and he surpassed himself in the brilliancy and geniality with which he conducted the ceremonies of the evening.

The tributes paid to Mr. Sunny, while eloquent, were marked with a note of affectionate regard typifying the spirit which pervaded the entire gathering and brought forth expressions of hearty appreciation when, after enumerating the many accomplishments and achievements of the guest of honor, each speaker dealt with the kindly nature, the helpful disposition and the inspiring influence which they had met with during their association with him.

The tribute of Mr. Theo. N. Vail, president of the American Telephone & Telegraph Company, was one of affection and high regard, and dealt with an intimate association with Mr. Sunny covering a period of over thirty years.

Mr. Samuel Insull, of Chicago, president of the Commonwealth Edison Company, a friend and

business associate of many years' standing, made the opening address and was followed by Mr. N. T. Guernsey, of New York, general counsel for the American Telephone & Telegraph Company; Mr. E. W. Rice, Jr., president of the General Electric Company, and Mr. H. M. Byllesby, president of the H. M. Byllesby Company.

The last speaker was Dr. Frank W. Gunsaulus, who presented the testimonial, a massive silver plaque, suitably inscribed, and bearing the facsimile signatures of all the dinner hosts. Dr. Gunsaulus in his remarks paid an eloquent tribute to Mrs. Sunny, who, with a party of ladies, had entered the gallery to listen to the addresses.

Mr. Sunny's acknowledgment of the honor done him was characteristic, a quiet, earnest and effective appreciation, gracefully and gratefully expressed. At its conclusion the diners gathered round the guest of honor, showering him with congratulations and good wishes, after which they sang "Auld Lang Syne," and Mr. Sunny's birthday came to a happy close. Mr. Newcomb Carlton, president of the Western Union Telegraph Company was among the prominent people present.

A Lost Message.

A prominent New Yorker found it necessary to go to Switzerland while an important transaction was pending at home. Before sailing he ordered that if this venture assumed such and such a phase to cable him.

Hearing nothing after his arrival in Switzerland he assumed that everything had gone along in a favorable way, but on returning home he found the very condition he had anticipated had arisen and inquired why he had not been advised. His chief clerk proved by his files that he had cabled, and, armed with the statement of his employer that the message had not been delivered asked the Western Union Telegraph Company to investigate.

All the papers in the case were submitted to the Swiss administration for its report. There, as in all European countries, cablegrams and telegrams are delivered by postoffice employes and it so happened that the letter-carrier to whom this message had been intrusted for delivery had a wonderful memory. At the inquiry he testified to this effect: "When I entered so and so's office to deliver the telegram in question, I was advised that the addressee was one of the men standing in the rear of the room. I approached them and inquired which was Mr. K——. One of them responded, accepted the message, and while continuing his talk with the other two, put it, unopened, in his coattail pocket. The incident impressed me. He might forget and I would be blamed. I was tempted to speak to him, but the three men were so engrossed in the subject of their discussion that I did not interrupt."

In due course this report reached New York and when it was read to Mr. K——, he exclaimed, "Nonsense, I have the same coat on now," and putting his hand in the pocket drew forth the lost message. He was overcome with surprise and apologized.

American Institute of Electrical Engineers Holds Annual Meeting by Telephone.

The American Institute of Electrical Engineers held its annual meeting in New York May 16, at which the members in six different cities participated in the transactions by telephone. The cities were New York, Boston, San Francisco, Philadelphia, Chicago and Atlanta. Greetings were sent over the telephone from New York to the members of the Institute assembled in the other cities, by Dr. Alexander Graham Bell, Thomas A. Watson and Theo. N. Vail.

Dr. Bell said: "I am glad to be alive. Not many men live to see the fruition of their own thoughts and live even beyond that. The telephone has gone far beyond me. I hope to live some time longer and see many more improvements over the simple invention I made." His remarks were greeted with applause from all over the United States.

Mr. John J. Carty, retiring president of the Institute, read a telegram over the telephone to the 5,000 members which had been received from President Wilson. The telegram read:

"May I extend my warm congratulations to the members of the Institute upon the unique meeting in which it has gathered its members in Boston, New York, San Francisco, Chicago, Philadelphia and Atlanta. It is with genuine satisfaction that I avail myself of this occasion to express my own deep appreciation of the work of the Institute in the developments of the country's resources."

A motion proposing a vote of thanks to those who had made the meeting possible was made in San Francisco, amended in Philadelphia and seconded in New York, and finally passed by the members in the different cities voting "aye" over the telephone.

The election of officers of the Institute resulted as follows: President, Harold W. Buck; vice-presidents, L. T. Robinson, Peter Junkersfeld and B. A. Behrend; treasurer, George A. Hamilton, secretary, F. L. Hutchinson.

The Gulstad Vibrating Relay.

The Gulstad vibrating relay was invented about the year 1898, by a Dane named K. Gulstad, an employe of the Great Northern Telegraph Company at Copenhagen. He designed it on the rule that a body in motion is more easily influenced by a force acting in the same plane, than if it were at rest, that is, it has less inertia. The armature of a receiving relay on a cable will respond to a much weaker current if in motion than it will do when at rest. This is the main idea of the Gulstad relay. It is an ordinary polarized relay, very accurately and delicately constructed, with an extra or auxiliary coil wound separately over the main coil. By means of this auxiliary coil the "tongue," or armature attachment, is made to oscillate between its stops, and this oscillation produces the condition of extreme sensitiveness, which is the chief characteristic of the relay. The main coil is left free for the cable current, which overcomes the effect of the auxiliary current, and stops the oscillations, and

thus signals are produced on the relay corresponding to those sent into the cable at the distant end. The theory is that when the curve of the cable current and that of the auxiliary current are in a certain relation to each other, perfect signals are produced. This relation is obtained by means of adjustable resistances and condensers.

A discharging instrument is employed to protect the relay from electrical discharges from the cable. If these discharges are allowed to pass through the main coil, the magnetic stability of the relay is upset, and constant readjustment is required. The discharger automatically cuts out the main coil, and the discharge from the cable passes to earth direct.

The recorder, technically described as an undulator, is an extremely sensitive instrument. The signals are recorded on a paper tape in the form of undulations, by a syphon which is attached to the armature of the electro-magnet. In the position of rest the end of the syphon presses lightly on the tape, and marks a line down the center as the tape passes underneath it. When recording signals the syphon moves from side to side of the tape, and marks the dots and dashes above the center, and the spaces below. This method of marking discloses the slightest tendency to faults which would not be observable on the ordinary recording instruments, and thus the utmost accuracy of adjustment can be maintained.

The automatic switch arrangement, by means of which the opposite line is connected to the transmitting instrument on the Gulstad relay side, when the Gulstad relay is receiving signals, is ingenious and effective. To render signals audible a small telephone receiver is introduced into the circuit in connection with a condenser. Altogether the whole system possesses the merits of simplicity and efficiency, and is easily kept in order.

Copper Wire.

The total quantity of copper wire drawn in 1914, according to the preliminary statement of the Bureau of Census, Washington, D. C., whether for consumption or for sale, was 131,484 tons, as compared with 147,156 tons in 1909, the decrease being 10.6 per cent.

Copper products taken as a group decreased 16.5 per cent. in value during the five-year period. In 1909 the weight of all copper wire and wire products, including the copper wire used in the manufacture of insulated wire by the producing companies, but excluding the weight of the insulation, was reported as 154,231 tons. In 1914, when the aggregate weight reported for insulated wire included the weight of the insulation, the aggregate weight of bare wire, insulated wire, and fabricated copper-wire products was 135,437 tons, with a value of \$42,928,550.

CIVIL SERVICE EXAMINATION.—The United States Civil Service Commission will hold a competitive examination for telephone engineer on June 21, at the usual places, to fill vacancies in the forest service at Denver, Col., and Portland, Ore. The salary is \$1,800 per annum.

Montana Court Procedure.

A Montana judge recently exhibited a bad spirit which showed his unfitness for the position he occupies in imposing a fine upon one of the telegraph companies for transmitting alleged information to be used for the purpose of betting on horse races. The judge imposed the maximum fine of \$1,000 and stated that he wished it could be made \$10,000. "See if it [the company] cannot be put out of business," he remarked to the deputy county attorney.

The judge was then informed that there were thirteen more informations against the company, to which he replied "Keep it in existence until all the cases have been tried."

The judge must have overlooked the fact, or was ignorant of it, that telegraph companies must accept messages offered for transmission, regardless of the contents. The companies are not permitted to perform the duties of judges, and are not allowed to discriminate.

The company gave notice of an appeal and the judge fixed the bond at \$5,000. The attorney for the company called attention to the fact that the costs and fine would not be much over \$1,000. "The county needs the money," said the judge, "and you've got millions behind you." "It will be a long time before the county gets the money," the attorney declared.

Telephone Societies Hold Simultaneous Banquets by Telephone.

Six thousand four hundred and fifty telephone men in four different cities of the country, on the night of May 19, held simultaneous banquets by telephone, exchanging greetings and songs and participating in demonstrations of wire and wireless telephony. The occasion was the meeting in New York, Philadelphia, Baltimore and San Francisco of telephone societies composed of male employees of the Bell System.

Each diner was provided with a telephone receiver connected with the circuits used in linking together the groups in the four cities. Three thousand two hundred and fifty receivers were required for the gathering of the Telephone Society of New York in the Seventy-first Regiment Armory. One thousand receivers were used in Philadelphia, one thousand two hundred in Baltimore and one thousand in San Francisco.

During the demonstrations the voice was carried to the four corners of the country. Greetings were exchanged with men of many of the principal cities of the nation. From New York the voice was sent to Portland, Me., Jacksonville, Fla., to the Mexican border, to San Diego, to Los Angeles, San Francisco, Portland, Ore., and Seattle, Wash. The mileage of the circuit used in the demonstrations totalled 21,745.

The newly perfected wireless telephone was brought into use, too, permitting Capt. W. H. G. Bullard, chief of the Naval Bureau of Communications, to talk from his home in Washington with the telephone men in New York, Philadelphia and Baltimore. Capt. Bullard's words traveled by wire-

less to the Arlington radio station, where they were thrown through the air to the Western Electric Company's building, West Street, New York, and from there they were carried by wire to the audiences in the three cities. Mrs. Bullard was sitting in an adjoining room while Capt. Bullard was talking and in response to his request she went to the telephone and talked for several minutes over the combined wire and wireless telephone. After the naval officer and his wife had said good-night to the banqueters a phonograph record of the "Star Spangled Banner" was wirelessly telephoned from Arlington, the 5,200 men standing up as the martial strains reached their ears.

Among those present in New York were Mr. Theo. N. Vail, president, American Telephone & Telegraph Company; Mr. Union N. Bethell, vice-president, American Telephone & Telegraph Company, and President of the New York Telephone Company; Mr. N. C. Kingsbury, vice-president, American Telephone and Telegraph Company; Mr. J. J. Carty, chief engineer, American Telephone & Telegraph Company; Mr. Charles H. Wilson, general superintendent, Long Distance Lines; Mr. Ford Huntington, vice-president, New York Telephone Company; Mr. J. A. Stewart, general manager, and others.

Banquet of Leased Wire Telegraphers.

The eighth annual banquet of the International Association of Leased Wire Telegraphers was held in Spilker banquet hall, 33 Cortlandt Street, New York, Saturday night, May 20. The membership was well represented and an enjoyable time was had by all.

Mr. R. M. Irwin, president of the association, briefly reviewed the results of the association's efforts during the past year, asserting that there had been a very substantial increase in the membership.

Mr. John A. Bell, secretary-treasurer of the Boston branch of the association, reported that the Boston branch was in a flourishing condition and that their object was to top the New York branch in number of members.

Mr. Chester L. Hall spoke briefly of his connection with the association, declaring it was a source of satisfaction to him to know that his efforts had been the means of securing employment for many telegraphers during the past eight years.

Mr. Thomas L. Mahan said that the object of the association was to continue the membership in employment, not to deprive them of employment.

Mr. J. Frank Howell and John Hoey, members of the Consolidated Exchange of New York, told of their good will toward the membership of the association and said they looked forward each year with pleasure to being present at the annual gathering of the International Association of Leased Wire Telegraphers.

The governing board of the association decided to hold another gathering of the membership in August when a shore dinner will probably be had.

Efficiency Engineering in the Telegraph Service.

(Continued from page 240, May 16)

The complexed system of telegraphy and telephony has to be carefully watched in order to attain the best results for the companies and the public. This is true particularly as to the former as employees have to do all of the work connected with the management of the telegraph. The public on the other hand does the work in connection with the telephone, the company simply furnishing the facilities for the service. In both cases it will be observed that the public pays for service. Columns could be written on this subject.

We will chiefly concern ourselves however with pointing out or emphasizing the necessity of maintaining this class of service at its maximum efficiency. Poor telegraph or telephone service is infinitely worse than no service at all. If a customer is told that the wires are down, he goes away satisfied. He realizes that the company will do its utmost to restore communication as quickly as possible. If, on the other hand, his business is accepted subject to prompt transmission, which is not forthcoming, then the trouble begins. The average business man knows just what is what and he can tell just how much of the explanations that are made to him are true and just how much are not true. Be careful when dealing with a business man. Remember that you may get away once or twice with a story that has been hatched on the shady side of truth but the risk is too great. If found out irreparable damage has been done the company and nothing short of resignations ever cleans the surface of the stains left by untruthful statements.

The ideas of telegraph officials should broaden in proportion to the experience gained in the management of company affairs. This means that if a person has been promoted to a responsible position and he continues to delve into the details of management he will sooner or later come to grief. Strange as it may seem the most efficient manager or superintendent is the person who appears to do little or nothing. His brain, however, is constantly working. Each one of his department heads is a man of good judgment. They have been selected with the utmost care and they relieve the official of the vast amount of detail work which would otherwise be thrust upon him. The official merely supervises and creates new ideas to be carried out or put into effect by the subordinates. An official receiving a salary of \$5,000 or more a year possesses a peculiar conception of his duties if he believes that he is paid for looking after the details of a district. We have in mind a very high official of one of the companies who has surrounded himself with the most competent men in the service, to whom he can refer subjects of an intricate and important nature and obtain speedy action coupled with the best possible business judgment. Efficiency and thorough organization under such a management are apparent whichever way one looks. Every day there comes to this official important subjects to be thrashed out and settled to the satisfaction of the company as well as the customers. Imagine for a moment this official arguing that no one else can

render him any assistance in such matters. The official we have in mind digests the contents of each case, turns it over to one of his competent men, tells him in a few words what to do in the matter and when the official next sees the papers, the reply is in such shape that he has only to read it over and affix his signature to the document. Sometimes, of course, the views expressed do not coincide with his own. In such cases a change is made. The lesson we wish to convey to our readers is that while the reply is substantially what the official would have it the work has been done by a subordinate thus freeing the official of several hours' time that it would take to arrange the reply in the proper language. The official pursuing such methods has ample time each day to pass on from ten to thirty such documents, whereas if he did the dictation and looked into the details and previous records on the subject, he would make hard work and wear himself out in the adjustment of five cases. Such an official as has been described here is worth \$10,000, \$15,000 or \$20,000 a year to the company that employs him. We frequently hear that the chief clerk or others attached to an office in reality do the work of the officials. In a vast majority of cases this is not true. The subordinate officials have been told just what to say. It is true, however, that the chief clerk may use his own language but the thought or information is essentially that of the official, although it may have been conveyed to the chief clerk in one simple sentence.

We knew the manager of a very large telegraph office who took home with him every Thursday night several hundred vouchers comprising the weekly payroll of the office. Everyone of these vouchers was signed in ink by the manager. He pooh-poohed at the idea when it was suggested to him that his name might just as well be printed on the vouchers and thus save him the many hours of labor which necessitated his working until two or three o'clock in the morning. He thought that the interests of the company which he represented demanded that he should look over each voucher before signing it. Now as a matter of fact all of the detailed work in connection with each voucher had been finished by his clerical force. They had checked up the payroll and it was a waste of valuable time and energy for the manager to undertake this weekly task. The day after the task of voucher signing this manager was unfit for duty. He was worn out and he became so irritable in the management of his office that his usefulness as a manager was shortened by many years. He died a martyr to detail, because he lacked efficiency. He had grown up and developed from a messenger. He knew the telegraph service from beginning to end but he imagined that because he did know it so well that it became necessary for him to handle as many details as possible which was to the detriment of the service in general.

When the question was put up to the manager of another equally large office he stated that he had one of his clerks affix his signature to the vouchers by means of a rubber stamp. This was efficiency. In these days, however, in many cases the name of

the manager is printed on the vouchers. The records are so kept that mistakes are almost impossible and if it were not for the fact that a signature is necessary to distinguish the several departments, there need be no names at all affixed to the vouchers.

(To be continued)

All Within a Century.

Eighty years ago the railroads were just beginning to be operated. Now there are over 600,000 miles of railways threading all the continents, which have cost over \$50,000,000,000. Even in Africa there are over 20,000 miles of railroad track. The first steamer crossed the Atlantic Ocean in 1819 in twenty-five days, but steamers were not used for trans-Atlantic traffic until 1838, just seventy-eight years ago. The Mauretania, of the Cunard Line, is about thirty times as large as the first Cunard steamers which began service in 1839. Railways and steamships have revolutionized the commerce and industries of the world. No future change in the conditions of human existence comparable to that which has been effected by steam transportation is conceivable, says the *Hartford Times*.

Newspapers, as we know them, really did not begin to exist until after the Civil War—about fifty years ago. Paper made from wood, the fast presses, the collection of the news of the world by telegraph, machines to replace hand typesetting, and all that goes into the mechanism of a modern newspaper were unknown a little more than half a century ago. What improvements in printing are possible compared with those here mentioned?

Electricity, now the greatest of the world's working forces, may be said to have begun to be usefully employed in the operation of the telegraph in England in 1837 and in the United States in 1844. There are a number of people who can remember when Morse's first line was opened between Washington and Baltimore in the latter year. Now there are telegraph cables under all the oceans. The first electric lights began to glimmer on our streets in 1876, and the telephone appeared a little later. Railway cars began to be propelled by electric power about 1885. Can anybody imagine such a revolution in human conditions occurring again in the next 10,000 years as has taken place since the electric current was harnessed to a telegraph line 78 years ago?

The first sunlight picture of a human face was made seventy-five years ago—in 1840. Photography came with the introduction of the collodion process in 1851. Photo-engraving, which has made the use of pictures in books and newspapers as easy and as cheap as the production of printed matter, thereby revolutionizing the art of printing, is a development of the last thirty-two years. The motion picture was perfected just twenty years ago. Eighty years ago only persons of large wealth could leave their portraits to those who came after them. Today, pictures of the man or woman who does anything of public interest are put before the eyes of millions of his fellow beings. Who that has lived for sixty years does not remember the interest that was added to human life by the first

photograph albums? With photography may be coupled the phonograph, which enables us to talk into a machine, send the record to the other side of the globe, and have our voices reproduced there. What a deep chasm separates the lives of all the millions who lived before the days of photography and the phonograph, and the lives of all by whom they have been or will be used.

The world's supply of petroleum was first tapped for commercial use a little more than fifty years ago. It is now used all over the world as a source of light, heat, and power. The automobile might have come—on a limited scale—as the result of the invention of the electric storage battery and motor, but the fast running automobile would be an impossibility without petroleum and rubber. The gasoline engine alone has made the aeroplane of the Wright Brothers and the dirigible balloon of Count Zeppelin a possibility. Aerial navigation, which has been dreamed of for centuries, is the direct result of the discovery and development of petroleum. What imaginable feat remains possible to human beings so wonderful as the navigation of the air?

Half a century ago men were still marveling at the monstrous size of the pyramids of Egypt and a few great cathedrals in Europe. Nobody then dreamed that human beings would ever live and work in buildings rising even 200 feet in the air. The element of bigness in human structures no longer possesses the possibility of novelty or surprise.

Will anybody believe that anything can ever again make such a change in the methods of doing business as has been effected by the universal introduction of typewriting machines during the past quarter of a century? Will there ever be another chemical discovery as wonderful as the discovery of radium?

What is the world going to do for novelties and sensations during the next twenty or thirty thousand years? Will there be as many of them in the next hundred generations as have come into the personal experience of living men and women who were born eighty years ago?

Has it not been better worth while to see the beginning of all these wonders than it will be in 2016 or 4016 to see them then and to read about their origin?

TELEGRAPH RECEIPTS IN CHINA.—The receipts from telegraph administration in China last year amounted to \$3,000,000, nearly \$1,000,000 in excess of expenditures. The Chinese government owns and operates its telegraph lines and is acquiring its telephone services as rapidly as possible. Very few private telephone companies are now operating in China, and these will soon be taken over by the government. The rates for dispatching telegrams in China are four cents (gold) a word for messages within a province and eight cents (gold) a word for inter-province messages. The name and address must be paid for.

Papa, what kind of a plant is an electrical plant?
A current bush, I suppose, my boy.

Handling of Bridge Polar Duplex.

BY CHESTER J. MC KEE, EAST LAS VEGAS, N. M.

When you, as a repeaterman, do not earn your salary, you cease to be of value to your employer. If you earn more than your salary, you are of real value. It is what you do and not what you know that governs your worth. You may be able to read a blue-print equally as well as a high-salaried engineer, or you may know a lot about chemistry, etc., which you can never use, but this will not help you to handle a case of trouble when you have no time to refer to a print, nor can you use some stored up knowledge on chemistry. Neither will it guide you in handling a subscriber diplomatically. You may have held some fine position in the past and even been a leader in your work, but it is not what you were, it is what you are to-day, that counts. The first thing of importance is: How to do your work quicker and better than the other fellow; after this, learn all you can about blue-prints and other matters.

Experience — knowledge — is the greatest help towards this end. When you get enough experience so that whatever you do is done mechanically or apparently without effort, then experience has made of your work a habit. Any habit depends upon repetition to make it so; each habit is difficult, unpleasant, or "dry" at the start, whether it is one of using tobacco or that of sending and receiving the Morse code without thought of what dots and dashes are involved. The first time you made a letter, it was with lack of confidence; still you probably understood, theoretically, just what you were making. Had you never used the key again, you could not now handle it with the ease and confidence of an experienced operator, even though you know the alphabet as well as the more experienced hand. The latter's experience has made the operation a habit.

You may read an article on some familiar subject, or some light fiction and devour it without effort, but take an article containing strange matter and it all depends upon yourself as to how much of it you devour. You may take the line of least resistance and skim through, getting only a part of the value which another will get out of it, and still he may only get a portion of what the author has really put into his writing. Then, what you do devour, while it is perfectly clear to you upon reading, does not stick; you understand it well enough, but a habit is not formed of this understanding, so you forget it.

Perhaps you will conclude from this that habit depends upon memory. This is, in a way, correct but it does not mean that you require a good memory to gain experience. It did not require a good memory to form the habit of "sending" or of using tobacco, did it? It was repetition of use until it became a habit and now it is done unconsciously. The only bearing memory has upon getting experience is, that when you repeat the experience until it becomes a habit, you will remember it, and it becomes knowledge.

Some of your duties are not repeated often enough so that the experience is sufficient to form

a habit of them. Then there are places, more especially in small offices, where all of your duties occur so infrequently that experience thus gained is either "forgotten" or else the occurrence is a different one each time and it seems there are so few alike that there are no repetitions, consequently no habits are formed.

I think you will agree with me that your work is congenial and that it is a pleasure to do congenial work, especially when done without effort. The harder it seemed at first, or the longer it took you to reach a point where it became a habit, the greater is the pleasure. Now, in view of this, is it not worth a little effort to learn a thing well enough so that it becomes a habit, whether it is something you read or something you do?

Let us summarize a little. It is what you do and not what you know, that counts. You want to do your work quicker and better than someone else can do it. Knowledge of your work will enable you to do this. Knowledge is the result of experience. Experience is knowledge only when remembered. To remember, it is necessary to repeat the experience until a habit is formed. Therefore, knowledge is to repeat an experience a sufficient number of times for it to become a habit.

As habits are formed of things you do over and over, those you do not repeat seldom become rooted well enough so that it becomes knowledge. What is necessary then is to repeat, until a habit is formed, such things that will make of you a better workman. Just what are the qualifications for this? As before stated, you may be able to read blue-prints or figure out, mathematically, why a certain condition exists; in fact there may be no question you cannot "dope" out. You may even be a good corn doctor or an insurance agent, but do these things help you to earn more than your salary in your present work? The knowledge you want is a practical understanding of your position. This should be experience in handling any kind of a condition liable to occur in your work.

I maintain that you do not have to learn a lot of circuits; in fact it is not necessary to know a circuit or have any technical understanding of your sets—you can know just what is wrong and what to do by the condition manifested due to the trouble. You know at a glance, without thought, that when you open and close your key on a duplex set and the mil-ammeter needle reverses from one side to the other, that the wire is either open or grounded. Why do you know this? Do you consult a print or think of what the circuit is containing your mil-ammeter? you probably do not give it any thought because it has happened so often and you have asked yourself what the cause is so often and answered your own question so often that it is now a habit, requiring no thought.

Supposing I put this same case of trouble in the form of a question and ask what causes the mil-ammeter needle to reverse from one side to the other when you write, and answer that it is due to the wire connected thereto being either open or grounded. If you ask and answer this question until it becomes rooted, the condition due to an actual

case of trouble of this kind will suggest the answer, without hesitation, equally as though it does now, having learned it by handling. This is practical experience, and you can get it and get it more quickly and with as little effort as though you were doing the actual work.

I have arranged a series of practical questions and answers—questions which have been, or are liable to be asked of you in the nature of actual trouble any minute and which, when learned, will enable you to tell at once just what is the cause of any irregular condition and with as little thought as it now takes to tell when a wire has failed. In fact, the majority of troubles can be determined from a glance at your mil-ammeter—a most valuable adjunct to your duplex set.

Take five of these questions (no more) a day; refer to their answers until you learn them so that you can answer the five without referring to answers. Repeat questioning yourself until it becomes so embedded that a glance at the questions will suggest the answer without the least hesitation. Continue taking five daily until the answers to all are equally as familiar to you. Go over the answers and apply the condition to what would cause it. Formulate questions of your own and handle in the same manner. Apply this method to your reading of technical articles by making notes of the main points which you wish to remember. When you have learned them well enough, destroy the notes. Use it in committing to memory such matter as Phillips' code. Cover up the word until the code immediately suggests what word it is, then cover up the code in the same manner.

(To be continued.)

Conversation.

BY J. V. RIDDICK, NEW YORK.

Conversation is an art, and may be briefly defined as the ability to converse fluently and gracefully. The gift of speech is a noble endowment, and happily it is one that is to a large extent capable of cultivation.

It is paradoxical but true that one of the great essentials to becoming a good conversationalist is to be a good listener. "Speech is silver, but silence is golden." There is no more severe test of true gentlemanly courtesy than to have to listen to dreary twaddle with an appearance of pleased interest.

Excessive modesty and unseemly forwardness are alike reprehensible. Modesty in a charming quality, which "gives to talents and virtues the same charm which chastity adds to beauty." Yet by an excess of this virtue a man may become so vacillating and timid that he will court the defeat that, with a little pluck, a little more boldness and self reliance, he might have readily avoided.

Above all, the young should be becomingly modest in speech in presence of their elders. Nothing is so unbecoming in boys or girls as to thrust themselves forward in conversation. When their opinion is asked they have a right to give it modestly but without awkwardness.

There are two distinct sorts of what we call bashfulness; one, the awkwardness of a booby,

which a few steps into the world will convert into the pertness of a coxcomb; the other, a consciousness which the most delicate feelings produce, and the most extensive knowledge cannot always remove. Mere bashfulness without merit is awkward, and merit without modesty, insolent; but modest merit has a double claim to acceptance, and generally meets with as many patrons as beholders.

We should avoid being egotistic. Our own affairs may be intensely interesting to ourselves, but will probably prove insufferably wearisome to others.

Exaggeration, bragging over personal achievements, is a common weakness and a bad one.

In all our conversation we should avoid repeating anything unkind or spiteful. In speaking of other persons, and more particularly of the absent, kindness should always predominate. Good nature is a main requisite.

Avoid discussions. Discussions are interesting if they take place between tried friends, but between strangers they are fraught with grave danger.

To sum up: Our conversation should be discreet, good-natured, polished, avoiding all personal malice and odious egotism. It will naturally often fall on topics of current interest, but need not on that account descend to idle frivolity. We should be more anxious to make another person talk than to shine ourselves, and ever sensitive to detect and to avert whatever would hurt the feelings of others. So shall men say of us,

"Your words,
Domestics to you, serve your will."

Answers To Questions.

(47) Q.—In referring to the wireless contest at the San Francisco telegraph tournament last year your report of the event stated that a "high-frequency buzzer" was used. Will you please give me a few details about this device and how it was used in this instance, and oblige a wireless amateur?—B. N. F.

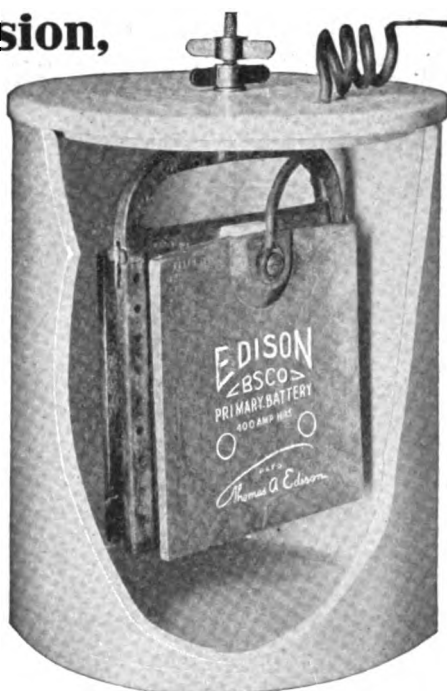
A.—The Marconi Wireless Telegraph Company supplies the following information regarding the matter:

An Ericson high-frequency buzzer, operated with two dry No. 6 cells, was used. This buzzer, when in operation, gives a note similar to that of a two kw. Marconi panel set. Shunted across the vibrator of the buzzer and one side of battery was placed a high resistance graphite rod in series with a telegraph key. The graphite rod was used to cut down the amount of current which would otherwise pass across through this connection, short circuiting the buzzer. By the use of the resistance rod sufficient current was allowed to pass to operate the telephone receivers, which were shunted around the resistance. All telephones were in parallel, there being but one continuous circuit. Signals could be strengthened or weakened at the will of the operator through manipulating the slide contact on the resistance so that signals resembling either distant or nearby stations could be received.

"Doesn't a motorman get a shock now and then?"
"Oh, no. You see, he's always a non-conductor."

Clear Transmission, Always Necessary, Warrants Use of the Highest Grade Battery

A low internal resistance battery that will not polarize, and maintains constant voltage, is sure to give better results in telephone work than a set of cells whose voltage constantly drops when on discharge, or in which the voltage is high or variable.



The Edison Primary Cells

maintain a lower uniform internal resistance than any other primary type; they furnish constant voltage and do not polarize at normal discharge rates; the 400 ampere hour size has a life greater than twenty single sets of dry cells and they require no attention between recharges, even though the service is such that a period of years is required to consume their capacity.

Type 403 400 Ampere Hours Capacity

Improve Your Service by Installing Edison.

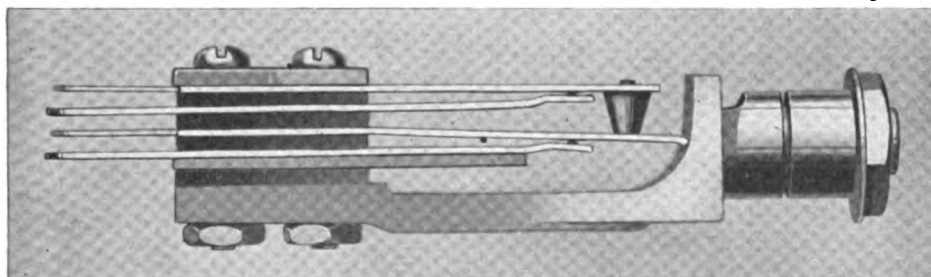


THOMAS A. EDISON, Incorporated
247 Lakeside Avenue ORANGE, N. J.

JACKS

Strong, Substantial Jacks for all Purposes

Not lightning proof, of course, but as nearly so as Jacks can be.



Actual Size

Made in a wide variety of contact combinations.

HALL SWITCH and SIGNAL CO.

NEW YORK

CHICAGO

Manufacturers of the GILL SELECTOR

The Universal Selector for Telegraph and Telephone.

KERITE

Signalling
Old and New

Old KERITE is always New



KERITE INSULATED WIRE & CABLE **COMPANY**
NEW YORK CHICAGO



THE RAILROAD.

MR. E. C. KEENAN has been appointed general superintendent of telegraph, New York Central Railroad Company, with headquarters at New York.

MR. R. F. FINLEY, formerly engineer, telegraph department, New York Central Lines west has been appointed superintendent of telegraph of the New York Central Railroad west of Buffalo, and the Lake Erie and Western Railroad, vice Mr. F. F. Reifel, who has been appointed division superintendent at Detroit, Mich.

MR. C. W. BRADLEY, superintendent of telegraph, Chesapeake and Ohio Railroad, Richmond, Va., was a recent New York visitor.

MR. F. L. BLENDINGER, former superintendent of telegraph of the Erie Railroad and of the Lehigh Valley Railroad, has been elected vice-president in charge of operation and maintenance, Lehigh Valley Railroad, with headquarters at New York.

GUY W. SMITH, aged twenty-eight years, operator on the Chicago, Milwaukee & St. Paul Railway, died at his home at Lennox, S. D., May 5.

WILLIAM A. GARDNER, aged sixty-five years, president of the Chicago and Northwestern Railroad, died at his summer home at Wianno Beach, Mass., May 12. He began as a telegrapher and was in the service of the Chicago and Northwestern Railroad for thirty-eight years.

THE PROCEEDINGS of the meeting in Chicago, March 22, of the Western Division of the Association of Railway Telegraph Superintendents have been published in the usual pamphlet form and are now being distributed.

CONVENTION OF RAILWAY TELEGRAPH SUPERINTENDENTS.—The thirty-fifth annual meeting of the Association of Railway Telegraph Superintendents will be held at the Hotel St. Paul, St. Paul, Minn., June 20, 21, 22 and 23. The business of the meeting will consist principally of discussion and action upon the special committee reports, which will be issued in advance. These reports will give suggestions and recommendations of standards and practices relating to the principal matters affecting the telegraph, telephone and other electrical departments of railroad service. Mr. P. W. Drew, 112 West Adams Street, Chicago, is secretary of the association.

Running Trains by Smoke.

Train dispatchers, the telegraph or telephone and train orders are regarded as essentials in the modern railroading, but there are many good railway men yet alive who did their railroading without such a thing as a telegraph wire or a train order.

When the Rock Island road was being built southwest from the Kansas line at Liberal, through the Oklahoma panhandle, and Texas, into New Mexico, the line from Liberal to Santa Rosa, N. M., was operated without telegraph dispatching or orders.

Trains were run by watching each other's smoke. There was one stretch of track seventy-two miles long that was as straight as an arrow and on the prairie it was no trick at all to tell where the other trains were by the smoke, and take the siding in plenty of time.

Experienced engineers were able to estimate just how far away a "smoke" was and could tell how far they could go and make a siding in time to pass an approaching train. But it sometimes puzzled the engineers who were not familiar with the plains.

One night a new engineer had just pulled out of Goodwell, Okla., when he saw a headlight of an approaching train ahead. He figured that the train had left Texhoma, ten miles ahead, so he backed into the switch at Goodwell and waited.

He waited two hours, in fact, for that headlight he saw was on a train just leaving Dalhart, Tex., sixty-one miles away.

MUNICIPAL ELECTRICIANS.

CONVENTION OF MUNICIPAL ELECTRICIANS.—The annual convention of the International Association of Municipal Electricians will be held at Baltimore, Md., August 22 to 25, both inclusive. Mr. Clarence R. George, Houston, Tex., is secretary.

OKLAHOMA CITY FIRE ALARM.—The fire alarm system at Oklahoma City, Okla., is a part of the Department of Public Safety and is under the supervision of City Electrician J. W. Murphy. He is assisted by assistant electricians R. R. Smalley and Elmer Davis, who also maintain the police signaling system. Each fire station has a telephone on a direct line from the telephone exchange.

LANSING, MICH.—According to the annual report of the Lansing, Mich., fire department, there are twenty-seven miles of aerial construction and nine miles of underground construction of the fire alarm lines. The city owns eighty-five fire alarm boxes and sixteen boxes are owned by private corporations. During the year a private branch exchange telephone switchboard was installed in the fire alarm office and four firemen detailed as operators.

OBITUARY.

EDWARD J. HOLDEN, a former operator in Boston, died in that city May 12. He was at one time manager of the Western Union office in the Old State House in Boston.

WILLIAM STANLEY, aged fifty-nine years, a well-known electrical engineer, died at Great Barrington, Mass., May 14. He was at one time chief engineer for the Westinghouse Electric Company. He made several important inventions in apparatus for the transmission of electric light and power, and was the holder of the Edison medal.

WILLIAM E. HUNTOON, aged eighty-one years, manager for the Western Union Telegraph Company at White River Junction, Vt., for sixty-one years, died May 4. Mr. Huntoon began his telegraph career in 1854. He worked on the first telegraph line that was put up in that vicinity which was the Bain chemical tape telegraph system. White River Junction became a very important repeater station under his management and a large number of first class operators were produced and served the Western Union Telegraph Company under him. Many of the first class operators raised in this office are now working in all sections of the country. All of them no doubt will regret to learn of the death of their old chief.

The Varley Loop Test*.

When a wire falls to the ground the firmness of contact therewith is obviously of a chance nature. It may fall on the grass or on a dry sandy soil, thus causing a high resistance at that point. In any event the resistance of the accidental ground will be of an unknown value even should the soil be moist and a fairly good conductor of electricity. It follows then that in case the ground resistance be unusually great, owing to an imperfect earth contact, its ohmic value might represent the resistance of several miles, or at least many feet of the wire itself, and thus give a result indicating a distance far from the fault.

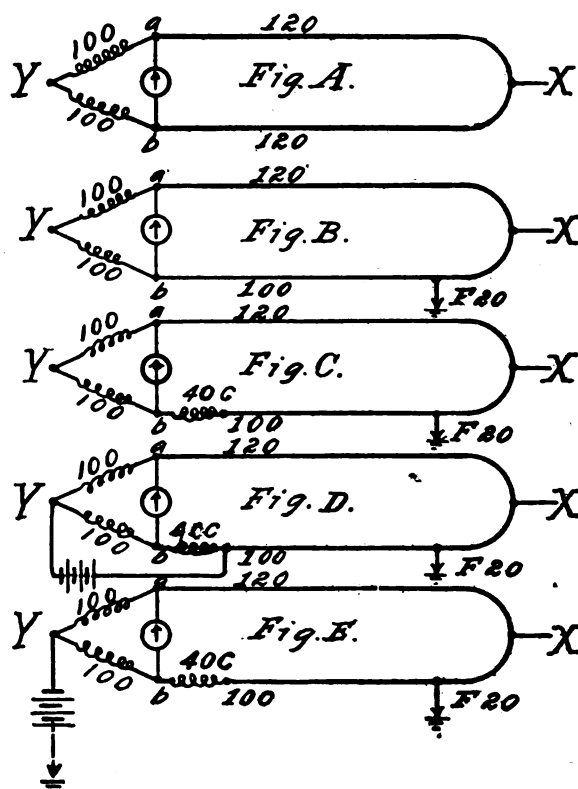
In order that the unknown value of such a ground resistance may be rendered negligible the following method, known as the Varley loop test, was devised. With this method, it should be explained, the defective wire is supposed to be grounded at one point and its continuity not broken, otherwise we could not loop back to the fault from a station beyond it. But the wire or other conductor making contact with it and thus causing the ground may itself possess a high resistance owing to its own imperfect contact with the earth.

The Varley operation consists, first, in looping the defective wire with a good wire running in parallel with it at a station beyond the fault and then ascertaining the total resistance of the loop formed by the two conductors, the latter thus becoming practically a metallic circuit and the ground ineffective.

Suppose, for example, we take a wire of any length possessing uniform gauge and resistance throughout and make a loop of it, connecting one terminal to the arm *a* and the other to arm *b* of a Wheatstone bridge as shown in Fig. A in the illustration. We can readily see that under these conditions the distance from the arms to the point *X*, both in resistance and length of wire will be the same on each side of the loop. *X*, therefore, must always indicate the middle of the loop, electrically speaking, when the resistance in ohms via both sides is identical up to that point. Thus in *a*, the total resistance of the loop is 240 ohms, as each side contains 120. If a ground happened to occur at the point *X* the distance in ohms from *b* to *X* would obviously be $240 \div 2 = 120$ ohms, as the diagram indicates.

Unfortunately for easy calculations the ground or fault does not usually come in at that convenient point, but somewhere along one side, if it is a loop that is defective, hence the arms or sides will be uneven, as may be seen in Fig. B wherein the same loop is considered. In this case, the worked out values show that while the total resistance of the two sides remains the same, one side has been shortened 20 ohms and the other lengthened by the same amount. Thus the upper side now contains $120 + 20$ or 140 ohms, while the other contains $120 - 20$ or 100 ohms, indicating a difference of 40 ohms between the original and the new value. If we endeavored to locate the fault by the previous rule, the quotient obtained by dividing the

loop resistance by two would still indicate that the ground was at the point *X*. So in order to ascertain just where the fault *F* really is we must make *F* the middle of the loop which, as we have shown, can only be the case when the resistance of each side of the loop is identical. Hence if we insert enough artificial resistance in series with the short side to make the total resistance therein equal to that of the longer side, *F* will be at the middle of the loop. The distance in ohms to *F* will now be half of the total resistance of both sides. In *C* it will be seen by the results obtained that the value of the resistance between *a* and *F* is $120 + 20 = 140$; and that of the shorter length *b* to *F* $100 + 40$ inserted resistance or 140 ohms also. Now if we take the original resistance of the loop, 240 ohms, and subtract



THE VARLEY LOOP TEST.

therefrom the 40 ohms inserted resistance shown in Fig. C and divide the remainder by two, the quotient will give the actual distance in ohms between *C* and *F* on the grounded wire. Thus $240 - 40 = 200$, and $200 \div 2 = 100$ ohms, the resistance of the defective wire measured to the point where it is grounded. The resistance in the rheostat always represents twice the value of the faulty conductor between *F* and *X*, the point where a loop made up of two single conductors is spliced together, because that length of wire is added to one conductor and the latter's increased value must not only be compensated for in the shorter length but the value of the missing portion must also be made up by the same means. The actual operation of ascertaining the values indicated in these diagrams by the Varley method would be as follows:

* From Pocket Edition of Diagrams and Complete Information for Telegraph Engineers and Students. By W. H. Jones.

In this test the arms of the bridge are made alike. Assuming that the lower wire in the illustration is the one at fault, connect that circuit to rheostat binding post *C* and the good wire to the arm *a* and loop the two together at *X*, the nearest convenient station beyond the ground *F*. Then connect the battery as shown in Fig. *D*, after which adjust the rheostat until the needle of the galvanometer bridged between *a* and *b* points to zero. The amount of resistance inserted in order to bring this about will represent the ohmic resistance of the loop as a metallic circuit. In this case it will of course be 240 ohms. Next ground one pole of the battery and connect the other to *Y* as shown in Fig. *E*. The resistance of the two circuits to the common ground *F* will now be uneven, and the difference in their resistances must be inserted in the rheostat in order to compensate for the shorter route. When the proper amount has been inserted the needle will again point to zero. Here the amount is found to be forty ohms.

The next step is to subtract this forty ohms from the 240 loop measure and divide the remainder by two, which gives 100 ohms as the actual resistance of the defective wire as far as the ground *F*. Thus $240 - 40 \div 2 = 100$ ohms.

From this operation we get the Varley formula, $L - R \div 2 = F$, where *L* represents the ohmic resistance of the two conductors measured as a metallic circuit, *R* the resistance inserted in the rheostat with the grounded battery, and *F* the distance in ohms to the fault.

So far we have only obtained the distance in ohms, or resistance. What we desire to obtain is the distance in miles or feet, as the case may be. In order to ascertain this the resistance in ohms to the fault must now be divided by the known resistance per mile, or say 1,000 feet, of the defective conductor itself. Precautionary measures should be taken to ascertain that a second ground does not exist on the defective wire measured.

The Spark Gap.*

The function of the spark gap in an oscillatory circuit is to allow the condenser to charge to the required potential, and then to break down and permit the charge to surge back and forth until its energy is dissipated. The ideal spark gap would be one which would insulate perfectly while the condenser was charging and conduct perfectly while it was discharging, and the nearer these conditions can be fulfilled the more efficiently will the spark gap perform its duty. Either condition can be fulfilled alone, but the combination is somewhat difficult to obtain.

The resistance of the spark gap when the discharge is passing depends upon two factors; it increases rapidly with the spark length, and decreases rapidly with the oscillatory current, amounting with a half-inch gap to several hundred ohms when a fraction of an ampere passes, and a small fraction of an ohm when fifty or sixty amperes are flowing. With the spark length above half an inch, the resist-

ance with the same oscillatory current flowing may be taken as roughly proportional to the spark length. But in a condenser circuit the amount of electricity stored up in the condenser, and hence the amount of oscillatory current, increases with the spark length. Thus we have two conditions working against each other as regards the influence of the spark length on the spark resistance; but we can increase the amount of current flowing without increasing the spark length by increasing the size of condenser, and the most efficient form of circuit for a given power is that in which a moderate spark length and large condensers are used.

When, after the condenser is charged, the spark gap breaks down, the gap becomes filled with metallic vapor and for the time being forms a high frequency alternating current arc. It is the presence of the metallic vapor which produces the conductivity of the spark. After the discharge ceases, however, if this metallic vapor is not removed from the gap, the insulation will evidently be poor at the time that the condenser is next being charged, hence the first condition of spark efficiency would be wanting. It is therefore necessary to remove this vapor completely as soon as possible after the surgings of the condenser charge cease. This is done partly by cooling the electrodes of the spark gap, thus stopping the vaporization, and in some cases by blowing the vapors out of the gap.

The Menace of Gasoline.

BY J. B. DILLON, LITTLE ROCK, ARK.

As the use of gasoline is often required in the office and home, and in view of the many dangers attending its misuse, I feel that a word of warning is applicable at all times, for we are so often liable to forget. I have read many articles relative to automobiles being equipped with fire extinguishers, yet it was but a few days ago that I saw one afire in the middle of the street, the owner awaiting the arrival of the fire department. After a time the chemical engine appeared and within twenty seconds the fire was extinguished.

If proper precautions had been taken it is reasonable to suppose the fire would have been quickly extinguished, with possibly only a few cents damage. The same accidents may befall members of the telegraph craft, their friends, and others.

There may be times when some one may use gasoline to cleanse an electrical device. Never forget to use it away from flames, and with the current cut off. Always allow the object to thoroughly dry before again applying the current. A disobedience of these rules may cause the loss of a telegraph office, the home, or even life. Gasoline in some cases is more destructive than dynamite. Handle it according to directions given by the underwriters.

MAGNETIC SURVEY.—Errors in existing magnetic charts to the extent of twelve to sixteen degrees have been found as a result of the work of the magnetic survey yacht "Carnegie." This craft has circumnavigated the globe between parallels 50 and 60 degrees south.

*From Manual of Wireless Telegraphy.

INDUSTRIAL.

INTER-PHONE CATALOGUE.—The Western Electric Company has issued a new catalogue of inter-phones and accessories. The complete line of inter-phones, the company's trade name for the inter-communicating telephone it manufactures, is shown at length. Several new systems have recently been developed to meet new requirements and all of these are listed. They include among others a new annunciator system arranged for from ten to seventy stations or more, and a new apartment house system to provide for inexpensive and flexible installations.

BLASTING HOLES FOR POLES.—Digging holes for telegraph and telephone poles by the old methods is laborious work, and it is getting more and more difficult to procure the necessary grade of labor. However, when soft, easy digging is encountered for full depth of the hole, little improvement can be made over the old methods; but when tight clay, hard pan, shale or rock is met with a rational use of explosives will both hasten and cheapen the work. Dynamite is employed for blasting pole holes by telegraph and telephone line builders. The bore hole may be punched by means of steel punch bars or a long churn drill. For harder ground a heavy drive point or drill is driven down. Hard shale and rock require the use of rock drills. The holes thus made are then charged with a dynamite cartridge. The effect of the blast is to force back the soil and form a "pot hole" at the bottom and loosen the soil above so that it may be easily spooned out. For deep holes the charge must be distributed along the hole. The number of pole holes dug per day is greatly increased by the use of dynamite; the labor is much less, and the poles may be more firmly set. A pamphlet on blasting pole holes will be sent on application to E. I. du Pont de Nemours & Company, Wilmington, Del.

Business Opportunities.

The present Commissioner of Patents has made very radical changes in the practice of the Patent Office, changes which have met the cordial approval of inventors and patent attorneys. This publication maintains a patent department that is doing excellent work for inventors employed by telegraph and telephone companies. Such inventors are invited to take advantage of our patent facilities. Correspondence solicited. Address Patent Department, TELEGRAPH AND TELEPHONE AGE, 253 Broadway, New York.

PHILLIPS' CODE has been recently revised and brought up to date. Any telegrapher is placed at a disadvantage if he cannot use this standard code. It is in daily use by the press associations and by hundreds of commercial operators all over the country, and is the standard form of telegraph abbreviations. Anyone familiar with Phillips' Code can report meetings, sermons, addresses, speeches, etc. Price \$1.00 per copy. For sale by TELEGRAPH AND TELEPHONE AGE, 253 Broadway, New York.

Electrical Instruments and Testing.

We are frequently asked about the methods employed for testing telegraph lines for crosses, insulation, grounds, etc., and we invariably recommend Schneider and Hargrave's book, entitled, "Electrical Instruments and Testing."

It is written in a very clear style by practical men for practical men. Mr. Jesse Hargrave, who wrote the chapters on testing, is a well-known telegraph engineer, and what he says on this subject is worth much to those whose duty it is to test wires, and to those who hope to occupy such position in the future.

The price of this book is \$1.15 per copy, which is a remarkably low price for so much information. Copies may be purchased of TELEGRAPH AND TELEPHONE AGE, 253 Broadway, New York.

Gold and Stock Day.

The Gold and Stock Life Insurance Association has set aside June 15, which is to be called "Gold and Stock Day," and on that day every member is going to tell at least one of his co-workers of the advantages of membership, and explain the plan of insurance and why it is that the rates can be maintained at a minimum. Mr. H. W. Dealy, 195 Broadway, New York, is secretary.

THE TELEGRAPH AND TELEPHONE LIFE INSURANCE ASSOCIATION has levied assessments 603 and 604 to meet the claims arising from the deaths of T. Williams, Weston, Ont.; L. D. Pollock, Hutchinson, Kan.; W. M. Munson, Pittsburgh, Pa.; T. F. Sloan, McConnellsburg, Pa.; C. L. Styles, Holbrook, Mass.; C. T. Currier, Columbus, Ohio; J. W. Plawden, Jacksonville, Fla.; T. Dusenbury, Paterson, N. J.; E. H. Farrar, Omaha, Neb.; T. J. Tobin, New York; G. Y. Nichols, South Boston, Va.; J. O. Roorbach, Boston, Mass.; W. B. Marsh, Atlantic City, N. J.; J. W. O'Leary, Brooklyn, N. Y.

LETTERS FROM OUR AGENTS.

NEW YORK POSTAL.

Manager J. J. Whalen left New York May 8 on an extended business trip through the South. Assistant Manager D. F. Mallen is officiating as manager during Mr. Whalen's absence.

The sympathy of the entire force is extended to the Misses Lillian and Gladys Shirley of this office on the loss of their father, Henry Shirley, who died Monday, May 15. Mr. Shirley was a brother of Charles Shirley, formerly manager of the New York office.

Among recent visitors to the operating department were Mr. and Mrs. M. D. Tierney and Miss Alice Tierney, of Lawrence, Mass., parents and sister respectively of assistant chief operator Thomas H. Tierney.

Mr. T. J. Kreger is in charge of the Eastern, State, Jersey and Pennsylvania ways, comprising a large number of extremely active circuits. He is assisted on traffic by Mr. W. H. Kelly. Messrs. Fullum, Ostrom, Post, Taylor and McLellan are some of the real old-timers found plugging away in this division. The principal circuits are manned

as follows: Portland, Ed Fullum; Troy and Saratoga, Perry Ostrom; Plattsburg and Vermont ways, Mr. Post; Elmira and ways, Robert E. Walsh; Schenectady and ways, Joseph Conaty; Hartford, Miss Lynch; Newark, Miss McEneaney; Bridgeport, Mr. Zoebelin; New Haven, Miss Kreutzinger, and Scranton, Miss Feuerman.

Operator B. Dashefsky has been transferred from the main office to the branch office at 1775 Broadway.

Appointments: P. M. Bachelder, R. Paul, A. Korn, G. W. Dillion, P. E. Mercer, H. B. Nelson, F. W. Boice, C. A. Kayser, D. V. Nelson and I. A. Davis. Resignations: J. P. Long, T. Fulton, J. F. Carlin, S. A. Hunt, G. C. Wilkins, L. J. Landry and G. W. Sweeney.

Mr. M. Auerbach, formerly of this office, has accepted a position as press operator on the *Sun American* at Lawrence, Mass.

NEW YORK WESTERN UNION.

Mr. S. L. Burts, division traffic superintendent, and Mr. F. M. Gillespie, division traffic engineer, Atlanta, Ga., were in New York last week visiting the general offices and the operating department. Mr. W. G. Wetmore, division traffic supervisor, Boston, Mass., was also a New York business visitor last week.

Mr. G. M. Robertson, manager of the St. John, N. B., office was in New York while on his vacation recently and visited headquarters.

The Western Union Educational Society of Washington, D. C., a chapter of the New York society, held its first general meeting Saturday night, May 27. The Boston society held a similar meeting on the same evening. The Pittsburgh society will hold a general meeting at an early date.

The employees who are entitled to vacations under the vacation plan of the company are availing themselves in increasing numbers. Some of them will be on vacations during every month in the year.

The wife of Mr. T. A. McCammon, city traffic supervisor, died May 10.

Miss Minnie Blohm resigned May 20 to be married. All without exception wish her a happy married life. We extend to the couple our heartiest congratulations.

A. L. Sink has returned to duty, having recovered from painful injuries to his leg. Mr. Sink's leg was caught between two cars on the Brooklyn elevated railroad.

Our sympathies are extended to Mr. W. S. Jermain in the death of his wife.

Western Union Educational Society.

The Western Union Educational Society held its last meeting and entertainment of the 1915-1916 season in the Walker-Lispensard Building, 24 Walker Street, on Tuesday evening, May 16. As of old the master of the wedding feast chided his servants for bringing forth the best wine last, so might the Educational Society be chided for bringing forth as this last entertainment such an excellent programme as was presented on this occasion. To

say that it was the best yet, is only to express it very mildly. The meeting was called to order and presided over by Mr. S. B. Haig, president of the society. Mr. Haig took pleasure in announcing that the membership of the society had increased to 515. After a few preliminary remarks proper to the occasion the entertainment was opened with an overture by the traffic orchestra.

Mr. A. C. Kaufman, general commercial agent, was then introduced, and gave a very interesting and instructive discourse, in the course of which he showed what the commercial department was doing towards increasing the business of the company.

Mr. J. L. Ferciot, commercial agent, Mr. J. M. Matier and Mr. F. H. Stuchbury, both of the Central Cable office, in recitations, comic songs and monologues, took the house. An unexpected addition to the programme in Mr. Hal R. Swann of Philadelphia was also enjoyed.

The main feature of the evening was the "Story of the Telegraph," by Mr. J. W. Gaffey, commercial agent. Accompanied by stereopticon slides, Mr. Gaffey in his own pleasing manner brought the audience back to the time of the first telegram and led them on through the many details and the many improvements in the telegraph business to the present era of speeded-up multiplex and cable service. The attention of the audience did not lag for a moment. The views were closed by the picture of president Newcomb Carlton, which brought forth a storm of applause.

The hall was artistically decorated with large American flags.

The meeting and entertainment was closed by a dance, all hands participating. Mr. L. C. Boochever proved himself to be an adept in fancy steps.

An interesting feature of the programme is that all taking part are members of the society. This speaks well for the home talent. The officers of this society are S. B. Haig, president; J. P. Edwards, first vice-president; C. C. Lever, second vice-president; F. A. Hoag, secretary-treasurer. The meeting was arranged by the committee on meetings and entertainments, comprised of the following: L. C. Boochever, chairman; T. M. Brennan, W. A. Young, F. A. Hoag, G. C. Gute, J. T. Laidlaw, T. Skidmore, Miss E. Vatet, Miss Lucy M. Park, Miss D. Glaser. The traffic orchestra consisted of Messrs. Kapner, Dunn, McCarthy, Skidmore, Goldberg and Miss Hysko.

The following officials of the company were among those present: Messrs. W. N. Fashbaugh, Lewis Dresdner, W. A. Sawyer, J. F. Nathan, J. W. Connolly, J. P. Edwards, J. Simmonds, W. G. Wetmore, division traffic supervisor, Boston, and G. E. Palmer, chief operator, New York.

The fact that, notwithstanding the very inclement weather, such a large gathering was present was very gratifying. We cannot let this occasion pass without paying a very high tribute to the officers and committees of this society, for the very able manner in which they are handling the affairs of the organization. This is the hour of progress, particularly of educational progress. Education

is becoming the matter of the hour, yes, verily of the minute, and it is safe to assume that a society carrying on such a grand and laudable work as is the Educational Society, is bound to succeed. Mr. Haig's opening statement that 515 members are at the present time enrolled in this society is sufficient evidence that the employes of this company are wide awake to the fact that education will help them to succeed, and that they are determined to improve themselves intellectually, and socially too, by taking advantage of the many opportunities afforded them by membership in the society.

PHILADELPHIA POSTAL.

The mother of Margaret McCarthy, telephone supervisor, passed away May 8, after a long illness.

J. E. Pucci, for many years identified with this company in New York, Pittsburgh, and other cities, was a recent visitor. Mr. Pucci is now connected with a Chicago concern.

A large number of Philadelphia Postal messengers were the guests of the Produce Merchants Boosters Association at one of the leading playhouses. The boys were in full uniform.

The "Postal" baseball team has scheduled games with some of the leading industrial teams in Philadelphia. The opening game was played May 6.

The report of the Philadelphia Mutual Investment Association shows a very good year. A number of new members were elected at its annual meeting May 10.

The Dot and Dash Club will be guests at the third annual field day of the Postal Telegraph Employes' Athletic Association, at Woodside Park, June 24. The day will be taken up by a picnic and track events.

Office electrician A. G. Carpenter recently spent several days in Atlantic City making alterations in the generating machinery.

The Pottsville office is being fitted with repeater sets in order to provide additional facilities to our up-state offices.

The baseball team will play the Keystone Telephone Company's team on Memorial Day.

The following new employes have been added to our roll: J. W. Kelley, B. S. Tirrell, Chas. Burt, F. P. McCloskey and Virginia McRoy.

Business is very brisk and all men are making good time.

Harry Thompson and Richard B. Ziegler are still confined at home on the sick list.

BOSTON POSTAL.

Mr. F. B. Travis, chief operator of the Boston office, is now identified with one of the leading

brokerage houses at the Hub. Mr. P. J. Farrell succeeds Mr. Travis as chief operator of the main office.

PITTSBURGH WESTERN UNION.

Mr. P. A. Nicklin, manager of the Cumberland, Md., office, with the assistance of chief operator Mr. P. Ward recently held a very successful "quiz" meeting in that office. All of the employes were present and both Mr. Nicklin and Mr. Ward displayed their originality in conducting the meeting by illustrating the manner in which employes should meet and serve the public. The rules of the tariff book were thoroughly discussed.

CHICAGO WESTERN UNION.

The Chicago Telegraphers' Aid Society gave a May party and dance at the Hotel Sherman May 12. There was a large attendance of employes from all the telegraph companies, broker offices and private concerns using telegraph wires.

J. M. Scott, who died May 21, was given a military funeral, May 23, at Graceland Cemetery by General A. W. Greely Camp No. 52. Deceased served in Porto Rico with the Seventh Company U. S. V. Signal Corps in 1898 and had an excellent record for efficient service.

INDIANAPOLIS WESTERN UNION.

G. W. Smith has been appointed manager of the Greenwood, Ind., office, vice Ralph Bidgood, who has been promoted to be manager at Greensburg, Ind., in place of W. D. Pyle, resigned.

Manager C. L. Yuille at Kendallville, Ind., has been transferred to Hammond, Ind., as manager, vice Mrs. E. E. Martin, resigned. Mr. Yuille is succeeded at Kendallville by A. W. Schwarz.

A. G. Godwin has been appointed manager at Princeton, vice Ernest Mann, transferred to the managership at Brazil, to succeed B. D. Mills who has accepted a position in superintendent J. C. Nelson's office at Indianapolis.

Guy R. McKee has been appointed manager at Salem, Ind., vice Ivan Adams.

Rubber Telegraph Key Knobs.

No operator who has had to use a hard key knob continuously should fail to possess one of these flexible rubber key caps, which fits snugly over the hard rubber key knob, forming an air cushion. They render the touch smooth and the manipulation of the key much easier. Price, fifteen cents. J. B. Taltavall, TELEGRAPH AND TELEPHONE AGE, 253 Broadway, New York.

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Secretary, - - - Edwin F. Howell

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Postal Building, 253 Broadway, Room 1030, 2.30 to 4.30 p. m.,
Fridays, and each 15th and last day of month.
Telephone Building, 24 Walker Street, Room 1129, Daily
9 a. m. to 2 p. m.
Saturdays 1 p. m.

ASSOCIATIONS AND ORGANIZATIONS.

The Old Time Telegraphers and Historical Association, Andrew Carnegie, president; F. J. Scherrer, secretary, 30 Church St., New York. All Old Time Telegraphers who are eligible for membership are requested to send for application blanks. The next reunion will take place in New York City, September 26, 27 and 28.

Association of Railway Telegraph Superintendents, E. C. Keenan, president; P. W. Drew, 112 West Adams Street, Chicago, secretary and treasurer. Annual meeting St. Paul, Minn., June 20.

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717 Railway Exchange, Chicago

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Advertisements will be accepted, for this department of the paper, at the rate of five cents per word.

Post office or express money orders, checks or drafts may be made payable to Telegraph and Telephone Age when ordering goods advertised in the classified columns. They will be endorsed and turned over to the proper party when the goods have been shipped to those ordering.

Our Subscription Department

This publication is prepared to handle subscriptions for any paper or magazine published. Our friends can hereafter look upon TELEGRAPH AND TELEPHONE AGE as a clearing-house for all journals no matter where printed. Address and make remittances to TELEGRAPH AND TELEPHONE AGE, 253 Broadway, New York.

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For Sale—Two Resistance Detectors, manufactured by J. C. Henry, Denver, Colo., reading 5/10-0-5/10; price \$10 each, good as new, cost \$25. Address Detector, c/o Telegraph and Telephone Age, 253 Broadway, New York.

For Sale—One Queen and Company, Philadelphia Round Pattern Ammeter, 0-10; price \$12, cost \$20. Address Ammeter, c/o Telegraph and Telephone Age, 253 Broadway, New York.

FOR SALE—A number 6 Remington Typewriter, second-hand, guaranteed to be in perfect condition. To be sold at a sacrifice; price, \$18.00. Address Typewriter, c/o Telegraph and Telephone Age, 253 Broadway, New York.

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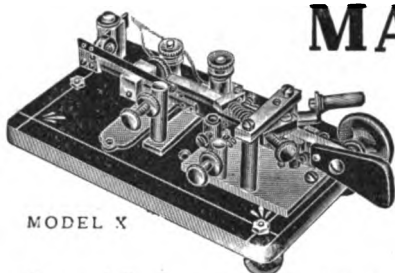
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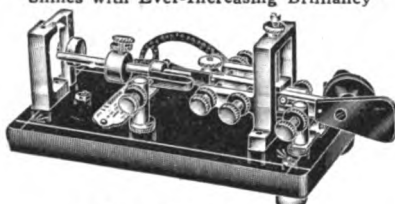
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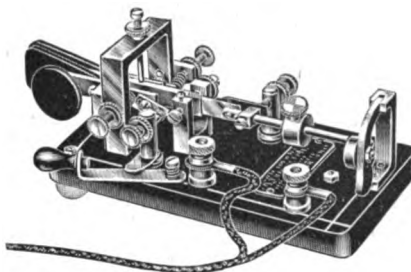
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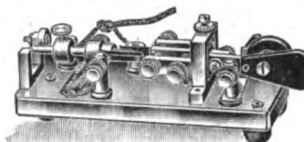
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The new book was desirable for the same reasons that makes necessary a revision of scientific text books with the progress of each decade.

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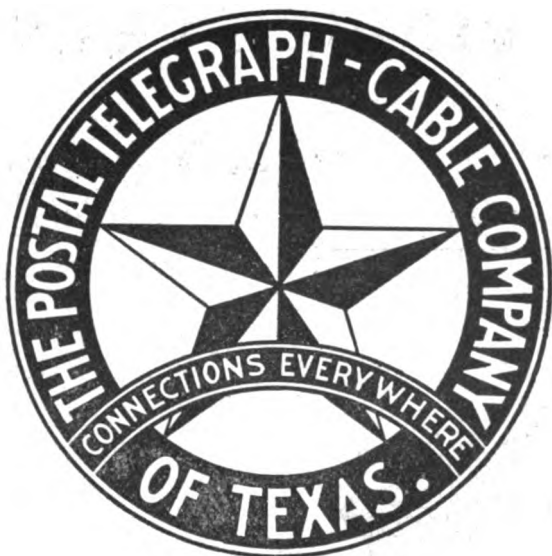
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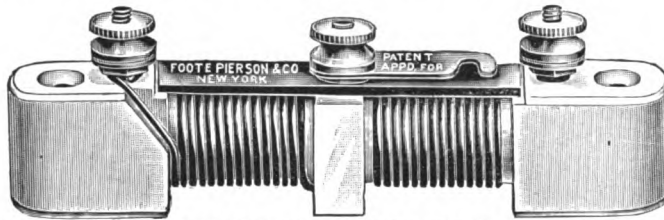
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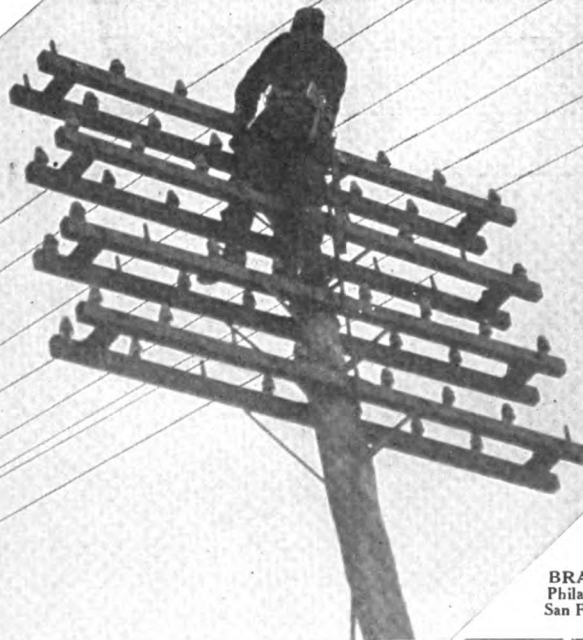
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Single Copy 10 Cents

For Yearly Subscription Rates See Editorial Page

No. 12

NEW YORK, JUNE 16, 1916.

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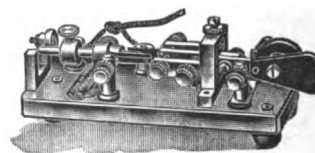
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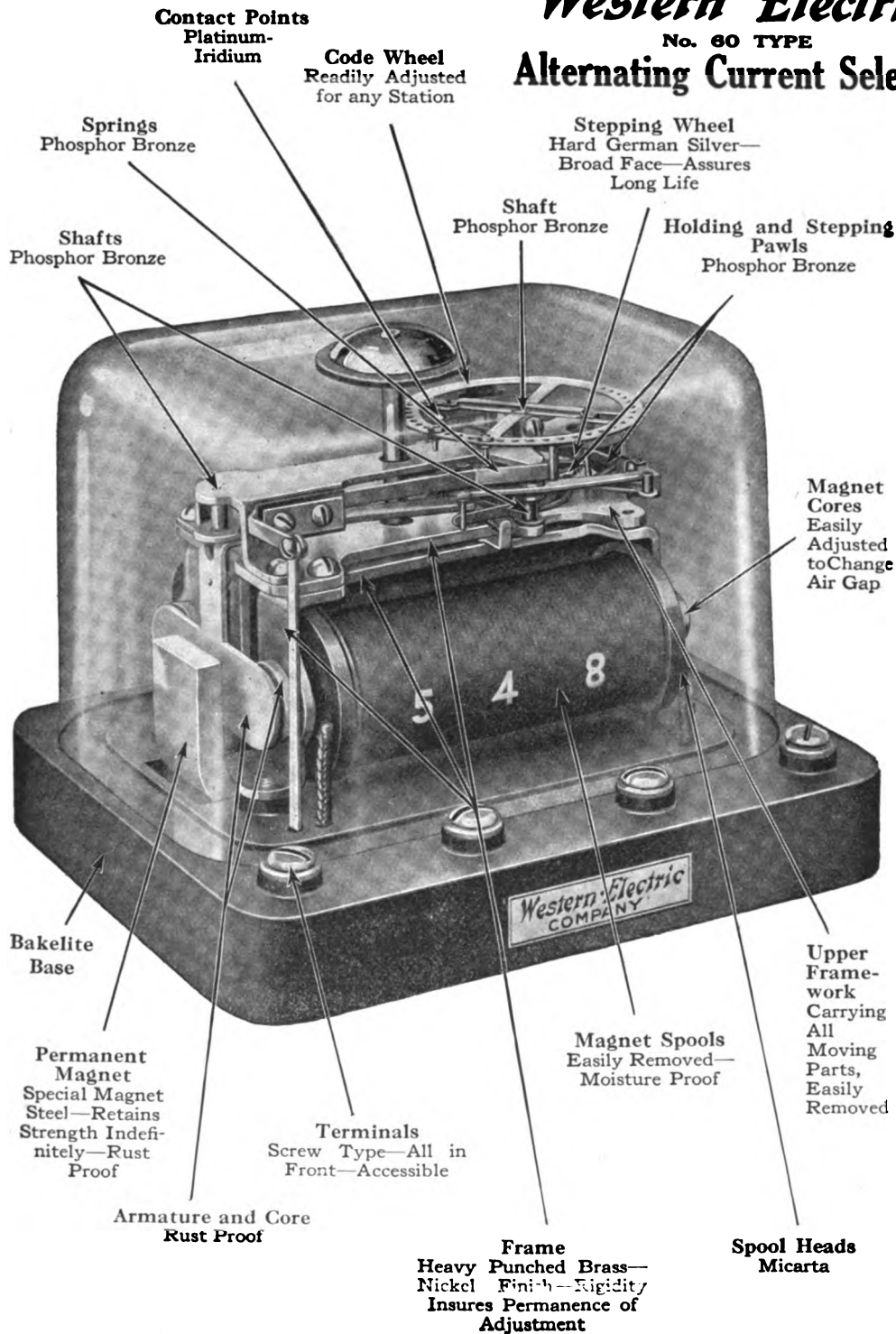
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Telegraph and Telephone Age

No. 12.

NEW YORK, JUNE 16, 1916.

Thirty-fourth Year.

Telegraph and Telephone Age

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BACK NUMBERS of this journal three or more months old will be charged for at the rate of 25 cents per copy. Issues over one year old, 50 cents for one copy, but where two or more copies are purchased, the price will be 25 cents per copy.

NEW YORK, JUNE 16, 1916.

CONTENTS.

The St. Paul Convention. Birthday of the Telephone. Knowledge in Texas	269
Stock Quotations. Telegraph and Telephone Patents. Personal	270
Postal Executive Office Notes. Western Union Executive Office Notes	271
The Cable. Canadian Notes. Canadian Pacific Appointments. Canadian Telegraph Statistics	272
The Telephone. Radio Telegraphy	273
Obituary. Municipal Electricians. The Associated Press. From an Old Cable Operator	274
The Student's Creed—I Will. Do You Use Your Brains?	275
Time System for Telephone Operating Rooms. By J. S. Miller	276
The Telephone: Its Use and Its Service. The First Telegraph Line. By J. C. Vail	277
Efficiency Engineering in the Telegraph Service	278
F. W. Cushing, a Successful Old-Time Telegrapher. The World a Whispering Telegraph Gallery. Daylight Saving	279
Watchman's Central Station Signal. Questions to be Answered	280
The Railroad. Programme of the Convention and Entertainment. Lehigh Valley's New Offices at Buffalo	283
Statistics of Meetings of Association of Railway Telegraph Superintendents	284
The Problem of Transportation Systems. By M. H. Clapp	287
Wire Testing an Exact Science. By R. M. Telschow	288
Statistical Information Regarding Telegraph and Telephone Train-Dispatching in the United States and Canada	291
Reunion of Military Telegraphers and Old Timers. Galvanometer Design	292
Wireless on Railroads. Censoring Telegrams on Railroads. Telegraph Oddities. Industrial	293
Handling of the Bridge Polar Duplex. By C. J. McKee (Continued)	294
Letters from Our Agents	295

The St. Paul Convention.

The thirty-fifth annual meeting of the Association of Railway Telegraph Superintendents will be held at St. Paul, Minn., next week—June 20 to 24—and from all indications it will be a very profitable one to the members. The proceedings this year will be conducted along lines different to those adhered to in the past in that there will be no papers read as coming from individuals but from special committees appointed to report on specific subjects.

The committee idea is a comparatively modern development in conducting the business of deliberative bodies and has been adopted by several large national societies.

The association has a reputation of being one of the most hardworking when in convention, and according to the programme there is enough work laid out to keep the members busy. Still the time will be interspersed with intervals for entertainment, which will be of an agreeable character. They work hard enough on duty at all times and a little recreation will do them no harm.

The traveling public little realizes how much it owes to the railway telegraph superintendents. These officials must keep every means of electrical communication in sound working condition without which railroad operation would relapse into "dark age" methods, and it is highly beneficial to the railroad service in general that they meet once a year to learn from others what is being done to improve the electrical service.

Birthday of the Telephone

June 1, forty-one years ago, the telephone was born, and at that time the art of telephony came into being. The first sound was carried over a wire a hundred feet long; now there are 21,000,000 of miles of wire and 9,200,000 telephone stations. There are 64,000 exchanges, and if all of the telephone switchboards were joined together they would extend forty-eight miles. Each day 25,000,000 messages are sent by telephone. This is a wonderful record for an invention only forty-one years old. One of the most impressive facts of the telephone is that any one can pick out of the one hundred million inhabitants of this country any particular individual he may wish to reach, within a few minutes at the most. It is a difficult thing for a man to secrete himself and escape the telephone eye, as big as this country is.

Knowledge in Texas.

In our March 16 issue we made some reference to the technical ability among telegraphers in Texas, and the frequency with which the state's technical resources were called upon to supply the demand for expert knowledge in other states.

There is a reason for all things, and the most probable reason why our Texas brethren should be so far advanced in technical telegraphy is largely due to the influence of this journal. A large number of telegraphers in the Lone Star State have profited by our educational work and are now qualified to fill larger positions than those they at present occupy.

We recently asked a Dallas official to place our catalogue of electrical and educational books in the hands of those needing our assistance. He replied a few days later: "I have not succeeded in placing

the literature in the hands of anyone for the reason that it is very difficult to find a telegraph man in Dallas who does not receive the AGE and who is not familiar with the various educational books that you handle for the benefit of the telegraph people in general."

We do not despair, however, for Texas is a large state, and there is lots of room for many telegraphers who do not know quite so much as the present generation of Texans. They will have to be taught, if they wish to preserve the reputation now enjoyed by Texas.

Stock Quotations.

Following are the New York closing quotations of telegraph and telephone stocks on June 12:

American Telephone and Telegraph Co.....	130 $\frac{1}{2}$
Mackay Companies	81 $\frac{3}{4}$ ex div.
Mackay Companies, preferred	68 ex div.
Marconi Wireless Tel. Co. of Am. (Par value, \$5.00)	3 $\frac{1}{2}$
Western Union	94

[This publication is prepared to purchase for its friends one or more shares of Western Union, Mackay, Marconi or any other stocks, either outright or on the installment plan. A remittance of \$10.00 per share should be made as the minimum payment if purchase is to be made on the installment plan. The stock will then be purchased at the market price and the balance due on the stock can be paid off at the rate of \$5.00 per month or in any other sum to suit the convenience of purchaser. In the meantime 6 per cent interest will be charged for the balance due on the stock. The purchaser, however, will have the benefit of the dividends, which, in many cases, will more than pay the interest charges. As soon as the stock is paid for, it will be registered in the purchaser's name and delivered to him. The commission charge on the purchase of stock is \$1.00 on transactions covering from one to eight shares. For eight or more shares the commission charge is 12 $\frac{1}{2}$ cents per share. In remitting to cover purchaser's stock, name the price at which purchases are to be made.]

Telegraph and Telephone Patents.

ISSUED MAY 16.

- 1,182,926. Telephone for Automobiles. To J. F. O'Brien, New York.
- 1,182,932. Party Telephone Line. To O. R. Schnerre, Galena, Ill.
- 1,182,946. Wireless Telegraph Detector. To R. J. Vosburgh, Brooklyn, N. Y.
- 1,182,966. Telephone System. To S. A. Beyland and H. L. Harris, North Ridgeville and Elyria, Ohio.
- 1,183,135. Telephone Signaling Apparatus. To S. S. Stolp, Chicago, Ill.
- 1,183,205. Selective Signaling Device. To H. E. Johnson and C. F. Bower, Lansdowne and Philadelphia, Pa.
- 1,183,214. Telephone Exchange System. To A. E. Lundell, New York.

1,183,292. Selective Signaling System. To E. R. Gill, Yonkers, N. Y.

1,183,803. Wireless Telephone System. To L. De Forest, New York.

ISSUED MAY 23.

1,183,923. Selecting Apparatus. To F. A. Watkins, Highland Park, Ill.

1,184,001. Loading Coil for Telephone Lines To W. Merz, Berwyn, Ill.

1,184,017. Relay. To P. M. Rainey, Glen Ridge, N. J.

1,184,047. Pupin Coil. To E. Thuermel, Charlottenburg, Germany.

1,184,376. Radio-Telegraphy and Telephony Receiver. To G. W. Pickard, Amesbury, Mass.

1,184,434. Method of and Apparatus for Wireless Telephony and Telegraphy. To C. D. Ehret, Philadelphia, Pa.

ISSUED MAY 30.

1,184,741 and 1,184,742. Telephone-Exchange System. To C. L. Goodrum, New York.

1,184,843. Signaling by Electromagnetic Waves. To R. A. Fessenden, Fortress Monroe, Va.

1,184,899. Mouthpiece for Telephone Transmitters. To H. F. Vandervort, Loveland, Ohio.

1,184,932. Automatic Telephone System. To A. H. Dyson, Chicago, Ill.

1,184,933 and 1,184,934. Telephone System. To A. H. Dyson, Chicago, Ill.

1,185,086 and 1,185,087. Lock-Out for Party Lines or Extension Telephones. To C. L. Goodrum, New York.

1,185,331. Telephony. To M. L. Johnson, Chicago, Ill.

1,185,369, 1,185,370 and 1,185,371. Relay. To F. B. Cook, Chicago.

1,185,372, 1,185,373, 1,185,374, 1,185,375 and 1,185,376. Telephony. To E. R. Corwin, Chicago, Ill.

PERSONAL.

MR. DANIEL W. SALE of Lynchburg, Va., brother of Mr. W. G. Sale, manager of the Western Union office at Richmond, Va., has been elected president of the National Travelers' Protective Association.

MRS. W. A. PORTEOUS, wife of Mr. W. A. Porteous, manager of the New Orleans office of this company, was in New York recently as a delegate from Louisiana to the convention of the Women's Federation. On her return home she stopped at Niagara Falls.

MESSRS. F. M. McCLINTIC, J. K. Burrell, R. C. Robbins, Wm. Heath, John Mellor and James Sheehan, all of the telegraph department of Kidder, Peabody and Company, bankers and brokers of New York, are at the Plattsburg military training camp for the month of June. Many other telegraph and telephone people from various sections of the state are also undergoing a military training.

MR. F. J. MATCHETTE.—The Hotel Pennsylvania, which is to be built by the Pennsylvania Railroad Company opposite its station in New York at a cost of many millions of dollars will be operated by Mr. Frank J. Matchette, an old-time telegrapher

and a member of the Old-Time Telegraphers' and Historical Association. Mr. Matchette has been in the hotel business over twenty-five years, and has organized and controlled various hotels through operating companies in Wisconsin. He has been at the head of large movements for the benefit of hotels throughout the state, and has served at various times as president, treasurer and director of the Citizens Business League of Milwaukee. Mr. Matchette is now president of the Milwaukee Vocational Schools. He is a native of Wisconsin and first entered the telegraph service in 1879 at Humbird, Wis., as night operator for the Chicago, St. Paul, Minneapolis and Omaha Railroad. His entire telegraph career was in Wisconsin at various points as day and night operator.

POSTAL TELEGRAPH-CABLE CO.

EXECUTIVE OFFICES.

MR. EDWARD REYNOLDS, vice-president and general manager, expresses his gratification over the prompt and efficient manner in which the enormous volume of traffic growing out of the recent Republican National Convention at Chicago was handled. He made it the occasion to thank General Superintendent E. W. Collins and through him every member of the Postal staff whose hearty cooperation contributed so largely to this splendid result. Mr. Reynolds instructed the Chicago staff to manage the convention according to their own ideas, without any outside official assistance. The result for this reason is the more gratifying.

MR. C. C. ADAMS, vice-president, was the executive office representative at the Chicago National Republican Convention.

MR. WILLIAM W. COOK, general counsel of the Postal Telegraph-Cable Company, has written a series of fourteen letters to the editor of the New York *Sun*, which have appeared in that paper at various times since February 2, on his proposal to avert government ownership by the appointment of a federal railroad board with a continuation of the present private ownership. These letters have been printed in pamphlet form for distribution.

General Superintendent E. W. Collins and Superintendent C. A. Comstock, Chicago, Ill., made an inspection trip to Waterloo and Marshalltown, Iowa, recently and are very well pleased with the conditions at both places.

MR. G. H. USHER, general superintendent, of Atlanta, Ga., and W. C. Lloyd, superintendent, Birmingham, Ala., recently made an inspection trip through the third district, and as a result the removal of several offices in that district to more commodious quarters to meet the demands of increased business has been decided upon. Among others, the Pensacola, Fla., office will be moved to a new location on South Palafox Street, and will be fitted up and equipped throughout with the latest type of apparatus. The Greenville, Miss., office will also be moved into a corner store in the same building in which the office has been located for several years. This move will be made at an early date,

so that the better facilities may be availed of in handling the traffic during the ensuing cotton season. The Baton Rouge, La., office is also to be rearranged and fitted up with a plate glass front and new equipment throughout.

MR. J. G. BLAKE, general superintendent, Pacific Division, San Francisco, has returned from a two weeks' business trip to New Mexico and Texas.

MR. THOMAS P. DOWD, manager at Pittsfield, Mass., has been appointed manager at Bridgeport, Conn. Mr. Dowd was manager at Pittsfield for four years, and prior to that time was manager at North Adams, Mass. His successor at Pittsfield has not yet been named.

MR. J. COSTELLOE, manager of the Cotton Exchange office, New York, has returned to duty after an illness of about five weeks with pneumonia.

MANAGERS APPOINTED.—C. W. Orange at Henderson, N. C.; N. Lafave, Malone, N. Y.

AN OFFICE has been opened at Rye, N. Y., for the summer.

TARIFF CIRCULAR.—The June 1 tariff circular of this company has been issued. Mr. Isaac Smith is superintendent of tariffs.

THE AUGUSTA FIRE.—The Postal Telegraph-Cable Company's employees who lost their homes and other private property in the great fire in Augusta, Ga., March 22, have been reimbursed by the company to a large extent. At the company's request Manager F. L. Wood sent to headquarters a full report of the losses of individuals. Each man's case was considered separately, and a check for \$2,502.37 was forwarded to Augusta, representing a liberal percentage of the net losses. Losses for overcoats and other personal effects in the office were paid in full. The amount of the check was distributed among seventeen employees in sums ranging from \$25.00 to \$613.00.

WESTERN UNION TELEGRAPH CO.

EXECUTIVE OFFICES.

MR. C. SPRAGUE, assistant secretary of this company, has returned from a trip to Buffalo.

MR. JOHN SIMMONDS, division commercial agent, New York, gave an illustrated lecture on the telegraph at the Pittsfield, Mass., high school June 2.

MR. W. T. DAVIS, chief clerk to General Manager W. J. Lloyd of the Western Union Telegraph Company, Denver, has been appointed superintendent of telegraph of the El Paso and South Western Railway, with headquarters at El Paso, Tex.

MR. T. A. WORTHINGTON, manager of the Newport News, Va., office, has been advanced to the managership of the Petersburg, Va., office.

MR. J. WILLIAM SCHMULTS, chief clerk and stenographer since 1867 in the president and vice-president's office of the Western Union Telegraph Company, New York, and who has been confined to his home at Hackensack, N. J., by illness since November, 1912, is able to be around and naturally enjoys the visits of his old friends and office associates. Mr. Schmuls was the first stenographer in the service of the company, having been short-

hand man for President William Orton and his successor Dr. Norvin Green. Since the death of the doctor he had been identified with the office of Mr. Thos. F. Clark, vice-president of the company, until he was compelled by illness to retire from active service three and one-half years ago.

WALKER-LISPENARD BUILDING TO BE ENLARGED.—The building at 24 Walker Street, New York, in which the main operating department is located, is to be enlarged by the addition of five stories, making it twenty-two stories high.

INSTRUCTION in the sale of telegraph service was given in Tampa, Fla., May 19, by Mr. L. J. Maxwell, district commercial superintendent, and Mr. A. J. Dillon, district commercial agent, Jacksonville, Fla., to the managers of south Florida offices. Among those present were: A. E. Lang, district manager, Jacksonville; H. C. Holmes, commercial agent, Tampa; H. G. Empie, manager, Tampa; C. K. Sage, Ocala; L. N. McCormick, Gainesville; Mrs. M. P. Hall, Sanford; J. B. Norton, Lakeland; W. G. Powell, Arcadia; A. C. Coon, St. Petersburg, and G. P. Maxwell, Fort Myers.

THE CABLE.

AT THE ANNUAL MEETING of shareholders of the Mexican Telegraph Company and the Central and South American Telegraph Company, June 6, the present board of directors of each company was re-elected. The meetings for organization will take place June 21.

NEW CABLES IN NEW BRUNSWICK.—Four new Canadian cables have recently been laid in Passamaquoddy Bay and the Bay of Fundy. These cables start from Eastport, Me., and connect with Deer Island, Grand Manan and Campobello, all belonging to Canada. Some points on these islands have telephonic connection with Eastport and thence to points in Canada and the United States, and one of the new cables is for the telephone service.

Cable Interruptions.

Interruptions to submarine telegraph cables are reported to June 12 as follows:

Azores and Emden (two cables), August 5; Shanghai and Tsingtau, and Tsingtau and Cheefoo, August 24; Sweden and Germany, September 30; Almeria and Melilla, October 1; Penogomera and Alhucempas (defective cable), October 1; Yap and Menado (offices closed) October 7; Obock and Djibouti, November 6; Constantinople and Tenedos, November 6, 1914; Greece and Crete, May 9, 1916; Nagasaki and Tamsui, May 15, 1916.

Book on Cable Testing and Working.

The third edition of "Beginners' Manual of Submarine Cable Testing and Working," by G. M. Baines, Carcavellos, Portugal, has been issued. The author is a practical cable man and has written the book in as clear a manner as possible for the benefit of beginners and students.

The price of the book is \$3.50 per copy. For sale by TELEGRAPH AND TELEPHONE AGE, 253 Broadway, New York.

CANADIAN NOTES.

MR. GEORGE D. PERRY, general manager, and C. E. Davies, traffic superintendent, of The Great North Western Telegraph Company of Canada, Toronto, Ont., and W. J. Camp, assistant manager, The Canadian Pacific Railway Company's Telegraph, Montreal, were recent New York business visitors.

Canadian Pacific Appointments.

The following appointments have been made in the Canadian Pacific Railway Company's Telegraph:

A. C. Fraser, superintendent, Atlantic Division, with headquarters at St. John, N. B., vice W. M. Godsoe, assigned to other duties; W. D. Neil, superintendent, Eastern Division, at Montreal, Que.; W. M. Thompson, superintendent of traffic, Eastern Lines, Montreal, J. G. Davies, chief operator, Montreal.

W. M. Godsoe, heretofore superintendent, Atlantic Division, is making a trip to the Pacific Coast prior to assuming his new duties as commercial representative in Nova Scotia, with headquarters at Halifax, N. S.

Canadian Telegraph Statistics.

The Canadian Pacific Railway's telegraph plant was valued recently at \$6,696,421.40, made up in part as follows: Pole line and equipment, \$3,897,238.39; wires, \$2,190,968.37; cables, \$275,044.11; instruments, \$119,149.40; batteries and dynamos, \$50,559; furniture, \$41,109; material in stock, \$50,000. The gross operating revenue of the road's telegraphs for the financial year ended June 30, 1915, was \$2,504,241.50, and the net operating revenue, \$1,121,734.34, against \$2,991,273.06 and \$1,377,585.42 respectively for the year ended June 30, 1914. The number of messages sent was 3,842,779, received 3,596,070, for the year ended June 30, 1915, against 4,038,505 sent, and 3,694,784 received for the previous year. The company's telegraph system has been constructed, and is being operated, as a part of the railway, although a general commercial telegraph business is conducted.

The Dominion government telegraph lines are valued at \$2,411,550, showing a general average of \$244 a pole mile for the whole system.

The Grand Trunk Pacific Telegraph Company estimates the average cost per mile of telegraph lines on the Lake Superior Division at \$291.22, with two wires to each pole, and on the Prairie Division at \$343 a mile, with four wires to a pole. On its Mountain Division, with two wires to a pole, the average cost per mile was \$606.93. For branch line construction, with an average of 1.12 wires to a pole, the average cost per mile was \$189.27.—*Canadian Railway and Marine World*.

THE TELEGRAPH IN SIAM.—The number of telegraph offices in Siam is sixty-eight, with twenty-four offices to the joint service with the Royal Railway department, making a total of 92 offices. The telegraph department conducts a school of instruction for those who wish to enter its service.

THE TELEPHONE.

MR. THEO. N. VAIL, president, and Mr. N. C. Kingsbury, vice-president of the American Telephone and Telegraph Company, were in Chicago in the interest of the service during the Republican National Convention.

MR. A. W. OSTRANDER, of the telegraph department of the New York Central Lines, general offices, New York, has accepted a position with the American Telephone and Telegraph Company at 24 Walker Street, New York.

MR. C. H. FULLER and Mr. E. J. Wehrley of the New York office of the American Telephone and Telegraph Company attended the Chicago and St. Louis National conventions in the interest of the company. Mr. C. J. Korndorfer had charge of the New York end.

THE BOSTON PLANT CHAPTER of the Telephone and Telegraph Society of New England held its annual meeting in Boston May 25. The election of officers for the season of 1916-1917 resulted as follows: President, John J. McDonough; vice-president, DeWitt S. Adler; secretary, Gordon S. Wallace, (re-elected); treasurer, William J. Hadley, (re-elected). The proposition to sever relations with the Telephone and Telegraph Society of New England was voted down. Mr. Charles G. Du Bois, comptroller of the American Telephone and Telegraph Company, New York, explained how the company was financed.

THE BELL TELEPHONE SYSTEM in the United States owned 18,757,378 miles of wire April 30, and the total number of stations was 9,406,083.

TELEPHONE PIONEERS' CONVENTION.—The convention of the Telephone Pioneers of America will be held at Atlanta, Ga., October 19 and October 20. Mr. R. H. Starrett, 15 Dey Street, New York, is secretary.

REFUSAL TO FURNISH TELEPHONE SERVICE.—The Appellate Division has rendered an opinion in an appeal taken by the New York Telephone Company from an order of Justice Cohalan of the Supreme Court directing the company to place a telephone in the saloon of William Restmeyer in Washington Street, New York, upon the payment of the usual charges. It was alleged that Restmeyer used his telephone in conducting a pool room. "The telephone company was well within its rights in refusing to furnish its telephone service to this relator," said the court, "and the writ, in the exercise of sound discretion, should not have been issued." The order directing the issuance of the peremptory writ of mandamus was refused.

NEW BRUNSWICK TELEPHONE COMPANY.—The annual report of the New Brunswick Telephone Company, New Brunswick, Canada, shows a gain of 912 telephones and a gain of \$9,500 in annual toll receipts for the fiscal year ended March 31, 1916. Other features noted in the report are the increase of from 50 to 100 per cent. in the cost of wire, cables, and hardware, and scarcity of labor on account of enlistments in the army. The gross revenue was \$482,287, from which operating expenses and depreciation were deducted, \$364,676, leaving

a net revenue of \$117,611. Dividends paid during the year amounted to \$100,764, and the capital stock was \$1,259,540.

BELL REPORT.—The operating income and expenses of the Bell Telephone System for April, and for the four months ending April 30, were as follows:

	Month of April	Four Months Ending April 30
Exchange Revenues	\$15,479,833	\$60,874,924
Toll Revenues	5,669,166	22,010,920
Miscellaneous Revenues . .	220,456	867,931
Total Operating Revenues	\$21,369,455	\$83,753,775
Depreciation	3,982,019	15,582,853
Current Maintenance	2,753,610	10,500,748
Traffic Expenses	4,230,052	16,638,302
Commercial Expenses	2,104,526	8,307,502
General and Miscellaneous Expenses	892,031	3,655,684
Total Operating Expenses	\$13,962,238	\$54,685,089
Net Operating Revenues	\$7,407,217	\$29,068,686
Uncollectible Revenues . . .	133,373	545,516
Taxes	1,163,305	4,664,140
Operating Income	\$6,110,539	\$23,859,030

RADIO TELEGRAPHY.

MR. E. B. PILLSBURY, general superintendent of the Marconi Wireless Telegraph Company of America, New York, has returned from an inspection of the high power stations on the Massachusetts coast.

MR. G. S. DE SOUSA, traffic manager of the Marconi Wireless Telegraph Company of America, New York, is on an inspection trip in the Southern Division, having sailed from New York on the steamer "Antilles" June 7 for New Orleans. He will be absent from his office for about two weeks.

MR. JOHN J. LEARY, of the English staff of the English Marconi Wireless Telegraph Company, was in New York a few days ago en route to England from Solomon Island, which lies midway between Samoa and New Zealand, having left the Island March 23 when he completed the installation of a naval wireless station for the British government. He traveled via Sydney, N. S. W., and sailed for home from this city on the steamer "New York," June 10. New York was the first break in his long journey, being obliged to wait here three days for a ship. Mr. Leary went to Solomon Island via the Suez Canal but returned via America because it was a shorter route.

WIRELESS MESSAGE 9,000 MILES.—The steamer "Ventura" recently arrived at Sydney, N. S. W., from San Francisco, reports that she picked up a wireless message from the station at Tuckerton, N. J., when 9,000 miles distant from that point.

A PUBLIC WIRELESS TELEGRAPH SERVICE has recently been inaugurated between Spain and Germany. The receiving and transmission stations are at Aranjuez, Spain, and Konigswinterhausen, Germany, respectively.

WIRELESS CONTROL OF TORPEDOES.—The House of Representatives at Washington has adopted an order as part of the fortification appropriation bill for the procurement of the rights of John Hays Hammond, Jr., to his invention for control by radio-dynamic energy of the movement of torpedoes. The Hammond invention is designed to direct and control torpedoes by wireless after they are launched.

Institute of Radio Engineers.

A meeting of the Institute of Radio Engineers was held Wednesday evening, June 7, at the Engineering Societies Building, 33 West 39th Street, New York. A paper was read on "Arc Oscillations in Coupled Circuits" by Professor Hidetsugu Yagi of the College of Engineering at Sendai, Japan. The efficient transfer of energy from the primary to the secondary and the production of overtones were fully considered. The paper was illustrated by many interesting experimentally determined curves.

OBITUARY.

L. M. MONROE, aged ninety-one, manager of the Western Union Telegraph office at New Canaan, Conn., for many years, died May 10. Mr. Monroe was a regular attendant at the reunions of the Old-Time Telegraphers' and Historical Association. He was also identified with the drug business at New Canaan.

WILLIAM J. ARMES, aged seventy-three, an old-time and military telegrapher, died at Danville, Pa., May 8 from the effects of a stroke of apoplexy. The remains were buried by the Elks, of which association he was a member. He was employed for forty years or more as manager of the Western Union office at Danville, until retired a few years ago on account of age.

CLARENCE T. CURRIER, aged fifty-one years, who recently died at Columbus, Ohio, was a well-known telegrapher and at the time of his death was an employe of the American Telephone and Telegraph Company. He worked in many of the New England cities and was well known in many other sections of the country. Mr. Currier was manager of the White River Junction, Vt., office of the Western Union Telegraph Company for three years and installed in that office in 1890 the first quadruplex.

MUNICIPAL ELECTRICIANS.

THE INTERNATIONAL ASSOCIATION OF MUNICIPAL ELECTRICIANS will hold its twenty-first annual convention at Baltimore, Md., August 22 to 25, both inclusive. Mr. Robt. J. Gaskill, chairman of the executive committee, is arranging for papers, and Mr. J. B. Yeakle, of Baltimore, is chairman of the local committee. One of the entertainment features will be a visit to the Bureau of Standards in Washington. Mr. Clarence R. George, city electrician, Houston, Tex., is secretary of the association.

The Associated Press.

Mr. Melville E. Stone, general manager of The Associated Press, New York, together with Messrs. Kent Cooper, chief of the traffic department, Charles E. Kloeber, chief of the news department and J. S. Elliott, superintendent of the Eastern Division, attended the Chicago and St. Louis conventions in the interests of the Association.

Mr. George H. Sickles, press operator at Newark, N. J., has been transferred to the telegraph bureau of the *Evening Telegraph*, Philadelphia. Mr. Sickles has been identified with The Associated Press since 1871 and is therefore probably the oldest employe of this news-gathering organization. Mr. Sickles was born at Newark, N. J., fifty-nine years ago. He became a messenger in The Associated Press office in 1871 when it was located at 145 Broadway. In the course of a few years he developed into a first class operator. Mr. Sickles has never worked for any other concern but The Associated Press.

From an Old Cable Operator.

Mr. Michael Fitzgerald, of East Brewster, Cape Cod, Mass., an old cable operator, writes as follows:

"I am sorry to learn that the publishing department is hampered by postal restrictions, and that your expenses are largely increased by the excessive cost of material. I sincerely trust that your friends will rally to your aid by adding to your list of subscribers.

"Though it is ten years since I last handled a cable key I am still keenly interested in the movements of my old friends who are in the service, and it delights me to hear of them through the AGE. I was particularly pleased to read your sketch of Mr. P. J. Tierney. Who that has ever worked under him can forget 'P. J. T.'? I have a vivid remembrance of his unfailing kindness to myself when, some twenty years ago, I first came under his supervision. Conscious as I am of having made many mistakes in my work, I well remember the generous way in which he made allowance for error, and the friendly manner in which he turned what should have been a reprimand into a word of good counsel. Truly a fine gentleman and an ornament to the craft of which he is a member."

"I.N.S." OPERATORS.—The telegraph operators on the Ohio state wire of the International News Service held a meeting in Columbus, recently, which was followed by a banquet. The meeting was for the purpose of getting together and bringing about cooperation that will result in improved service to the I.N.S. papers. Fifteen persons were present.

FAILURE TO DELIVER MONEY TRANSFER.—A citizen of North Carolina has sued one of the telegraph companies for \$5,500 damages resulting from the non-delivery of a money transfer for \$5.50 in another town. As a result of this failure the plaintiff alleges that he lost his membership in a fraternal organization together with an insurance policy, the dues on which the \$5.50 was to pay.

The Student's Creed — "I Will."

Mr. Frank A. Hoag, secretary-treasurer of the Western Union Educational Society of New York, is the author of a circular letter to the members, which contains a lot of good information, resolutions and advice. It is as follows:

I will blot out of my life the failures that come from wasted hours, and write into it the successes that come from time well spent.

I will keep life's page clean, and fill it with the record of knowledge gained.

I will fix my eyes on the goal of my ambition, and hold my hand to its task.

I will work hard, hope high, and live up to the best that is in me; then I can write at the end, "Well done."

In recognizing the well established fact that the two essential requisites for advancement and success in business are knowledge and training, The Western Union Educational Society was organized for the purpose of providing facilities and opportunities for developing and applying these essentials and to assist those who wish to find and take the best, easiest and quickest ways to the desirable things of life.

Conditions have changed materially and in order to meet existing conditions, we must alter our methods of working and living, or be cast aside. We must be progressive or retrogressive.

To avail ourselves of the facilities and opportunities provided will make us grow in intensity and diversity, and incidentally prepare us for advancement. One man will work forty years on one job and be pensioned, while another will study for a few years and become a specialist, a successful business man and millionaire. The only difference between the two is the manner in which they employed their time. We all have the same amount of time. One hour a day will accomplish wonders if properly utilized.

The Educational Society has established a library containing several hundred volumes of the best literature published; we have held several meetings and entertainments, where we had music, singing, refreshments and dancing; we published a "Year Book" containing the proceedings of the year for the benefit of those who could not attend meetings; we conducted a series of instructions in English; we have been conducting instructions in elementary electrical engineering since last October, for day and night shifts; we provided a piano for the ladies' retiring room and for the use of the society's entertainments; we have organized two classes in personal efficiency for day and night workers; and we organized a musical club.

The dollar you invested for dues has been expended economically and effectively. We prefer to have you patronize the library more liberally and attend the meetings and instructions more frequently, than the dollar you contribute.

Enrollment in the Society signifies your approval of it, and a desire to aid in maintaining one of the strongest and most beneficial societies in the city. Why not take an active part in its proceedings?

"No man is fit to win who has not sat down

alone to think and who has not come forth with purpose in his eye, with set lips and clenched palms, able to say, "I am resolved what to do."—*Bulwer*.

Do You Use Your Brains?

Not infrequently a close observer wonders why some people appear to fail to use their brains while performing assigned duties. Too many who have responsible duties to perform find themselves obliged to run for the "boss" just as soon as the old routine is changed. They lack the initiative to meet the change themselves. They have worked for years according to the direction of someone, or by some certain rule made for specific conditions. Let the routine of procedure be broken and they are lost in a sea of doubt and uncertainty, seeking somebody who will direct, guide or assume the responsibility of the doing of something.

In their heads lies a brain, but an inactive, useless brain, so far as being a valuable adjunct to the general make-up and value of the man who has to live by what he can do.

The progressive telegraph and telephone man stocks up with new ideas, new views of this and that, every day, providing he has not fallen into the rut of routine and become submerged in the pit of "I don't care." Every man can learn something each day, and it is usually those who learn something each day who find it easier to climb the ladder of promotion. The quality of the brain records is important, and a well-equipped brain is of more value than the muscles of a giant to every man who disposes of his labor to live.

A BOOK FOR LEISURE MOMENTS.—It has been truly said that "a little nonsense now and then is relished by the best of men," and telegraphers, as much as any other class of men, enjoy fun and humor. We have many copies left of "Lightning Flashes and Electric Dashes," a volume of choice telegraphic literature, humor, fun and wisdom, printed many years ago, but just as funny and interesting now as it was when it was published, and it will always so remain. It is splendid reading of the lighter vein and will help to brush away dull care and make the world appear brighter. The experiences and situations described in some of the stories are indescribably funny. The book is well illustrated by the late J. J. Calahan, a former telegrapher, who became a celebrated cartoonist years ago. Price, \$1.00. Send orders to TELEGRAPH AND TELEPHONE AGE, 253 Broadway, New York.

A FAITHFUL MESSENGER.—A messenger boy was given a telegram to deliver to a man living four miles from Ft. Wayne, Ind., and instructed not to return until it was delivered. He started out on his wheel in the evening and when he arrived at the residence of the addressee he learned that the man had gone to Bluffton, twenty miles away. The boy started out to find the man and was given a ride part of the distance in a passing automobile. He delivered the message and returned to the office late at night.

Time System for Telephone Operating Rooms.*

BY J. S. MILLER, DISTRICT INSPECTOR, CENTRAL MANHATTAN.

Manhattan and Bronx central office telephone operators in New York City, no longer need refer to large clocks mounted on walls and other places in operating rooms to ascertain the time. Instead,

and, although compact and easily read, are part of a very comprehensive system designed with a view to insuring an accurate and unfailing time service. The system consists of a grand master clock, located in the Western Union Telegraph Company's office at the Walker-Lispénard building; six district master clocks; and one building master clock in each office not provided with the district master clock; 1,076 position clocks at the "A" switchboard positions; also forty-seven secondary wall clocks distributed throughout the central offices in the division.

The entire system is electrically controlled. The grand master clock sends out hourly impulses, synchronizing the district master clocks. The district master clocks send out hourly impulses synchronizing the building master clocks, and the building master clocks send out impulses over two circuits—one every six seconds to the position clocks, and one every half minute to the secondary clocks. The district master clocks, in addition to regulating the building master clocks in their respective districts, also operate the position clocks and the secondary wall clocks in the buildings in which they are located. To operate the clock service as a whole a system of subway

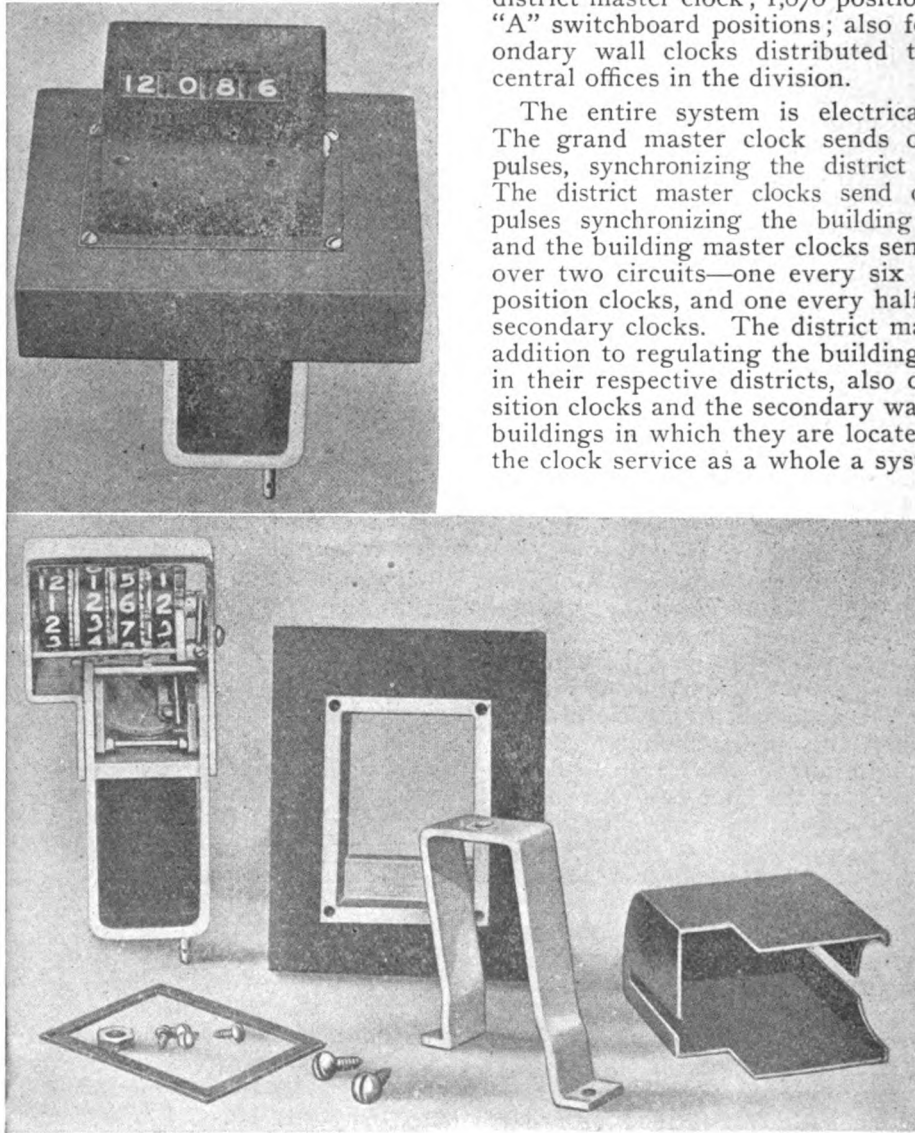


FIG. 1—POSITION CLOCK.

devices known as position clocks have been installed at each alternate "A" switchboard position throughout the division and are so placed that each clock is in the direct line of vision of two operators. The advantage derived from their use is manifest when it is realized that operators in the offices embraced in the territory have occasion to refer to the clocks 500,000 times every twenty-four hours, in timing calls and answering inquiries from subscribers.

The position clocks are provided with four dials which are so arranged that the time of day is indicated in hours, minutes, and tenths of minutes,

cable conductors 56.4 miles in length is used.

The district and building master clocks are provided with a regular clock movement and are electrically wound every hour. The position clocks are operated by a relay movement every six seconds, or ten times per minute. The secondary clocks are operated by a relay movement every half minute.

Associated with each district and building master clock are numerous relays controlled by these clocks and a group of transfer keys. The relays enter directly into the operation of the clock system and also provide a duplicate service so ar-

*Abstract from *The Telephone Review*.

ranged that the position clocks can be operated by either service, dependent upon the position of the transfer keys. This emergency service is so complete that should a district or building master clock fail, its work will be performed by a dis-

Watch every employe in your office. Start on them when they are office boys and train them to look up to the telephone as one of the best "business getters" in the shop if handled right. Teach them to smile while they are speaking. Admon-

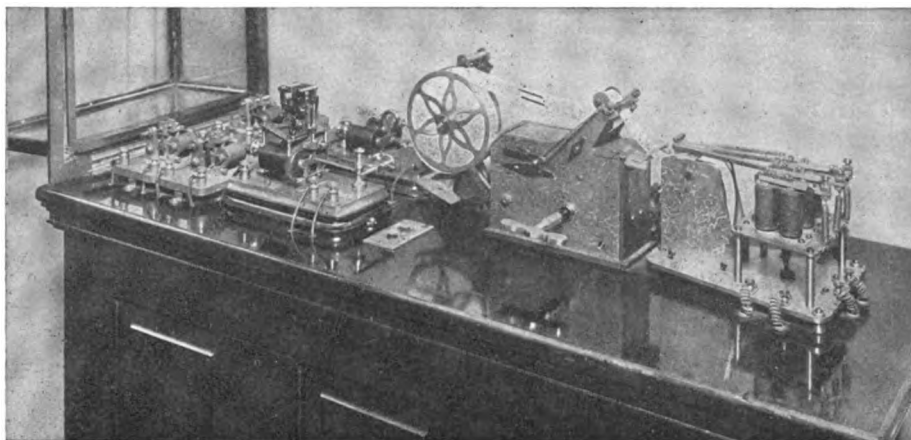


FIG. 2—THE CHRONOGRAPH.

trict or building master clock in an adjoining office by setting the transfer keys in the reverse position.

The clocks have now been in use several months and during this period there has been no interruption of service in any office. This fact clearly demonstrates the reliability of the system.

The Telephone: Its Use and Its Service.

A telephone is like a can of gasoline, a motor-cycle, or a wheelbarrow on a dark night. That is to say, a very useful and satisfactory thing if approached circumspectly and handled intelligently, says "The Right of Way."

But because there are many people who have not learned how to properly use this greatest of all inventions there is still friction to be overcome.

There will always be the fellow who strikes a match on the rim of the gasoline can, just as there will be the office man who "bawls out" at the girl at the switchboard.

Now the gasoline kicks back in a purely extemporaneous but instant manner, and the match striker, who is really a dangerous man, is removed entirely from an environment to which he is a menace.

The telephone, unfortunately, cannot shoot a few hundred volts into the carcass of the "grouch." The instrument is scientifically harmless. It has to be, in order to properly serve the big majority of gentle folks who daily use it.

So the "grouch" talks roughly to his company's patrons, gives slurring answers to polite inquirers, drives away business and imparts to every person with whom he talks on the wire a series of gloomy shivers.

A fool or a misanthrope with his lips at the transmitter may do more damage to any business than his labors in other channels can produce.

He is a millstone around his company's neck, and if there are enough of his sort, the company will drown in a sea of unpopularity.

ish them to be polite to everybody all the time.

If you have a fellow who won't learn, for goodness' sake don't let him fool with a high-class electrical instrument like a telephone. Let him go down to the power house and connect with a 200-horsepower dynamo.

The First Telegraph Line.

BY J. C. VAIL, MORRISTOWN, N. J.

In your issue of May 16, page 230, you print an article headed "The First Telegraph Line," in which it is stated that "Mr. Henry J. Rogers * * * had charge of the instrument when the message 'What hath God wrought' was received." This is contrary to the record in Vail's "Journal of the Telegraph," which shows no mention of Rogers as operating before September 1, 1844, when Vail went to Washington. "What hath God wrought" was sent May 24, 1844, more than three months before, during which time Vail was teaching Rogers to operate.

The "checker game" which is referred to in the article, was played on November 23 and 25, 1844, by Mr. Green of Baltimore and Dr. Jones of Washington. Green won. Rogers operated in Baltimore and Vail in Washington.

Vail writes in his diary, May 24, 1844, "Telegraphed all morning. Miss Ellsworth sent as the first message, 'What hath God wrought.' In the afternoon took the instruments to the lower depot and put them up. Commenced telegraphing at 9 o'clock with Prof. M. at Washington."

On the next day, May 25, 1844, Morse writes Vail by mail (why did he not telegraph?) "I was excessively fatigued last night and so probably were you. Good bye. S. F. B. M."

On June 9, 1844, Vail writes his brother, "None but Prof. Morse and myself can operate it."

The best thought of the telegraph profession is expressed in TELEGRAPH AND TELEPHONE AGE. Become a subscriber.

Efficiency Engineering in the Telegraph Service.*(Continued from page 258, June 1.)*

A superintendent had been in correspondence for some time with the manager of a city of about 100,000 inhabitants in regard to renting a building for a new main office. When negotiations had proceeded to the point where it was necessary for the higher official to visit the city and sign the lease, the superintendent without saying a word to anyone spent several hours in the city where he was needed looking around to see what he could do in saving his company money. The result was that when he made his presence known to the manager he had saved his company \$10,000 on a ten years' lease. This was efficiency. Now as a matter of fact the local manager was in no wise to blame. He was powerless to make as good a rent bargain as was a stranger. He was known personally to the real estate people and it was difficult for him to negotiate with them on other than personal grounds. The real estate men had concluded that the manager's word in deals of this kind was final. That is where they made their mistake.

Another case is on record where a manager had informed his superintendent that the best terms he could make for a ten-year lease on a new office was a certain figure. The superintendent saw the owners of the property himself and before he left them he had saved \$6,000 on what was said to be the lowest terms that the company would have to pay to obtain a lease for the ten years. A local manager is not always in a position to successfully combat the arguments of property owners who wish to lease their buildings for a long term of years to desirable corporations like the telegraph companies.

A superintendent recently called our attention to the capabilities of a manager in a small city who had not occupied the office more than a year. In that short space of time he had increased the receipts from \$700 to \$2,000 per month. We are asked how he accomplished this. By simply pointing out the advantages of the telegraph over the mail in reaching out for new business.

One day this manager walked into the office of an oil company. He saw on the desk a large quantity of circulars and catalogues ready for the mail. This gave him a line of argument to use in this instance in winning some telegraph service for his company. In a nice way he informed the manager of the oil company that business men were getting tired of receiving voluminous documents in the shape of catalogues and circulars day after day and week after week, and he wound up by urging the oil man to send fifty telegrams to his customers announcing the change of the price of oil which had gone into effect that day and to note the result. The message was arranged. It simply stated that oil had been advanced to such a figure and to take advantage of the present state of the market before it went higher. The telegrams cost from twenty-five to forty cents each. Twenty-four hours after the messages were sent there were over twenty-five orders for oil received by telegraph on the books of the company. Since that time the manager of the oil company considers the fluctuations in prices of

sufficient importance to have them transmitted by wire instead of by circulars through the mail. Today it is a common occurrence to have one message with from thirty to forty addresses handed in to the telegraph office for transmission. The value of the telegraph in this case was that it reached the man who did the ordering. Even where telegrams are delivered by telephone the addressee is called to the telephone and he has to acknowledge its receipt. A circular is frequently laid aside by the clerks and in many cases it is never noticed.

The great telegraph and telephone systems have been built up to their present proportions to accommodate business conditions, and the business man who fails to take advantage of the opportunities afforded by the companies will find himself laboring at a great disadvantage. He wonders why his competitors are getting the business. They are reaching out for it by the quickest possible methods. The other man is contented to utilize the mails, sending twenty-five letters at two cents each and not receive a favorable reply from any while the up-to-date merchant secures one order out of every four or five telegrams dispatched in quest of new trade. One official states that it was a difficult task for the people to get away from associating a telegram with sickness or death or some other untoward event. A messenger boy is seen to enter a residence by neighbors and they all wonder what has happened. Who could have been taken sick or who has died? Today, however, this feeling has largely passed from the minds of the people. The approach of a messenger boy to a house is now regarded in the same light as a letter carrier or an express man. In other words he is more likely to bring a message of joy or business for the telegraph is so common that the night letter fulfills the requirements of the mail and it takes infinitely less time to prepare it.

A man passing a telegraph office reads the words "Night Letters." It reminds him of the fact that he has not written home. He steps into the office and dashes off in pencil a night telegram to his wife or his employer. If it is to the latter he adds "Notify the folks at home that I arrived safely." He does not need to carry stationery with him. The telegraph companies do this for him and their offices can be found in every few business blocks.

To the enterprising business man the night letter telegram is a short cut to secure orders. The telegraph companies are, through their officials, exploiting the business efficiency aspects of the telegraph and wherever it is tried it is proving profitable. It is only a matter of simple calculation to figure the distances by mail and by telegraph from one city to the most distant points in the country. Distance by telegraph of course is nothing. Distances by mail, however, have to be seriously reckoned with. Telegraphically every city in the United States is within thirty minutes distance of every other city. Contrast this with the slow mail service and you have a wonderful argument in favor of the business man using the telegraph for all negotiations, orders and offers. The cities of the Atlantic sea board are six days distant from the cities on the Pacific coast by mail and thirty minutes by

telegraph. In these days of rapid fluctuations in prices, imagine if you can what happens in the interval in sending quotations by mail to distant points when it requires ten or twelve days to receive an answer.

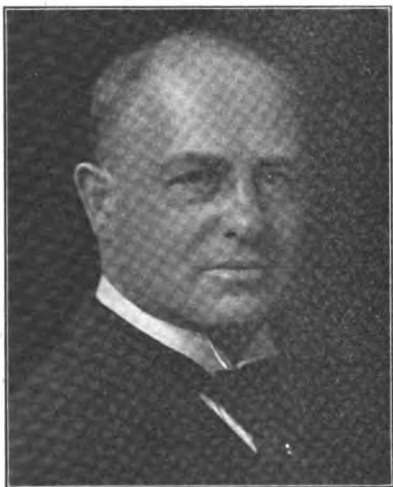
It should be the duty of every wide awake manager to point these facts out to his customers, after which an efficient telegraph service will cement a friendship between the telegraph and the business community that will prove everlasting.

(To be continued.)

F. W. Cushing, a Successful Old-Time Telegrapher.

Mr. Frederick W. Cushing, whose portrait is presented herewith, is an old-time telegrapher of high reputation and was well known throughout the country in the seventies and early eighties. Since 1882 he has engaged in various commercial enterprises and made a success in everyone. He is now president of the Moraine Hotel Company at Highland Park, Ill., which operates one of the most successful hotels in the territory surrounding Chicago.

Mr. Cushing was born in Buckingham, Que., Canada, June 10, 1856. He learned the telegraph



F. W. CUSHING.

business at that place in 1868 and in 1870 he entered the service of the Hudson Bay Company, in Northern Canada. In 1872 he worked at Ottawa, Ont., for the Montreal Telegraph Company, and in 1873, he accepted a position at St. Paul, Minn., with the Northwestern Telegraph Company. In 1874, he entered the service of the Western Union Telegraph Company at Chicago and in 1876 was transferred to the New York main office of the same company. In 1881 he was appointed wire chief of the metropolitan wires in New York. He left the telegraph service soon after to represent Professor Gray at the Electrical Exposition at Paris, France, where the harmonic telegraph was exhibited. He remained abroad a year in the interests of Professor Gray. On his return he accepted a position with the Postal Telegraph Company, in 1883, as electrician, and resigned in 1885 to accept the position of superintendent of the Chi-

cago Sectional Electric Underground Company, and he put in the first underground conduits in America. He next became manager of the Chicago Arc Light and Power Company, and then president of the Highland Park State Bank, which position he still holds in addition to that of president of the hotel company.

Mr. Cushing is one of the founders of the New York Electrical Society.

The World a Telegraph Whispering Gallery.

Ulysses S. Grant was elected president of the United States in November, 1868. In the far interior of Africa, in the region of the equatorial lakes, an educated man, anxious to know the news of the world and to hear from his relatives and friends, David Livingstone, learned that the Union general had become the head of the republic, just three years after his election to the office, says the *Boston Herald*.

A British explorer and elephant hunter now in the heart of Africa, in the French equatorial section, 6,000 miles from the coast of Ireland, knew a few hours after she sank, that the "Lusitania" had been torpedoed. In that remote portion of what a half a century ago was called the Dark Continent, by the payment of five francs a month, he gets daily reports from the battle fields of Europe. He writes that elephants and giraffes sometimes carry off the wires around their necks, and occasionally upset the iron standards, and that once in a while a tornado puts the wireless out of commission, but that there are alternate routes over which news may come, and that both seldom are interrupted at the same time. Indeed, he declares: "It would not surprise me, while in the act of shooting an elephant, to hear a voice from the clouds: "Latest war news from the front!"

Stanley found Livingstone and told him the "news" of the world—news that was then three years old—late in 1871; now, after less than forty-four years, the cable, the telegraph and the wireless tell the hunter far beyond what society calls "civilization" the chief facts of a day's history before the day is done. The world has become a vast whispering gallery.

Daylight Saving.

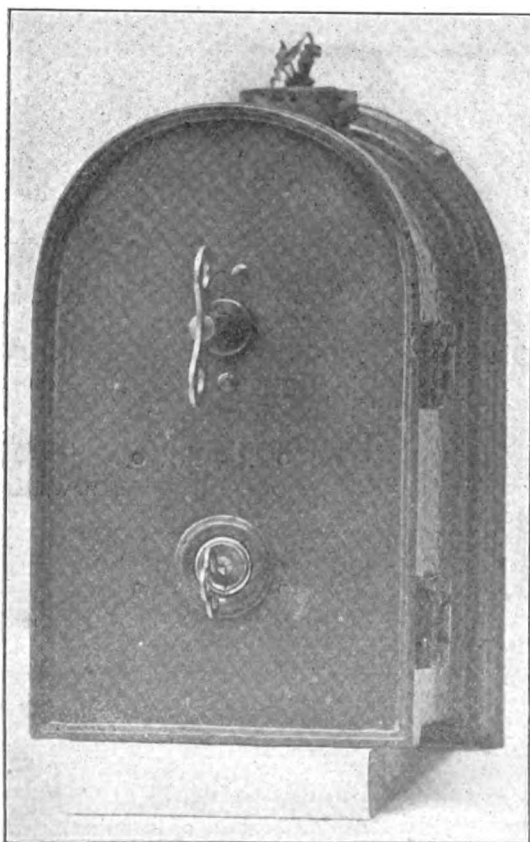
President Marcus M. Marks, of Manhattan Borough, New York, has started a campaign for a nation-wide movement to turn the clock ahead one hour during the summer months. He announces that the plan has already been enacted in several cities in this country and that the bill introduced in Congress to make it effective in the District of Columbia, will be amended to extend the movement over the entire country.

Mr. Marks enumerates the advantages of the plan as follows: 1. A benefit to health; 2. Saving in artificial illumination; 3. Additional afternoon hour for recreation; 4. Benefit to children; 5. More daylight for return of workers to their homes; 6. More efficient work in industrial plants; and 7. Better conditions for sleep.

Watchman's Central Station Signal.

Mr. J. C. Carmody, of Fitchburg, Mass., formerly manager of the Postal Telegraph-Cable Company's office in that city, has established a watchman's central station signal system which is giving excellent satisfaction where it has been adopted. It is a simple modification of the ordinary American District call box, and its purpose is to insure proper attention to duty by the night watchman and protect him in case of carelessness or accident.

The system consists of signal boxes placed in different locations in a plant and connected by wire with the central station, where signals given by the watchman at scheduled intervals are automatically recorded on instruments and timed by the operator on duty. A copy of this record is sent daily to the office of the plant. In case the



WATCHMAN'S SIGNAL AND FIRE BOX.

watchman fails to give the signal on schedule time the operator, after an interval of fifteen minutes will send an officer to the premises to investigate and in case any suspicious circumstances are noticed will immediately notify the proprietor. Used in connection with a watch or electric clock system already installed this system gives a double check on the watchman and double protection to the premises.

The watchman is under the constant supervision of the central office operator. Watchmen will fall asleep, meet with accidents, illness or attack from trespassers. In such cases his signals

are missing and an immediate investigation is started before it is too late to prevent serious consequences. Where a watchman is checked up by the central station system he seldom shows any delinquencies, and is far more reliable.

An important feature of the system is the arrangement for getting the watchman to turn in his signal when late on his schedule. An extension telephone is run into the engine room and if the watchman falls asleep or forgets his signal, the operator rings a bell. If no signal is forthcoming another bell is rung five minutes later. If nothing is heard from him the send-out man covers the plant. Every bell is recorded on the report the next morning.

Mr. Carmody has recently perfected a combination watchman and fire alarm box which will greatly add to the protection of the premises. It is arranged with two keys, one for the watchman's duty signals and the other for use in case of fire, when the door is opened and the fire signal turned in. The keys are removable, thereby preventing any tampering with the box.

Questions to be Answered.

[The following questions are based upon the contents of Jones' "Pocket Edition of Diagrams and Complete Information for Telegraph Engineers and Students," and have been prepared for the study of this book. The asking of questions to be answered by the student is an excellent method of acquiring information, besides cultivating the habit of concentration of thought which is so essential in the study of any subject. Every telegrapher who is desirous of learning the technical side of telegraphy should follow this method of instruction diligently. He will be surprised to note from time to time how his knowledge is increasing and this almost without effort on his part. This book is sold by TELEGRAPH AND TELEPHONE AGE at \$2.00 per copy.]

In testing a differential relay to ascertain if the coils are wound evenly what is more important than testing for ohmic resistance? (page 322).

All other things being equal, will the magnetism of the two cores of a relay be the same necessarily?

Upon what does the magnetic value of a current depend?

What is the meaning of an ampere-turn?

What is the effect on a relay of having a greater number of convolutions on one coil than upon the other?

What is the effect of two or more convolutions of the wire making contact with one another where the wire has become bare by some accident?

When is a relay "lopsided" and when is it "crossed"?

What is the meaning of each of these terms?

What method should be pursued to test a relay? (page 324).

What should be done with a relay found in an uneven condition?

In connecting wires to a binding post what is the principal aim? (page 326).

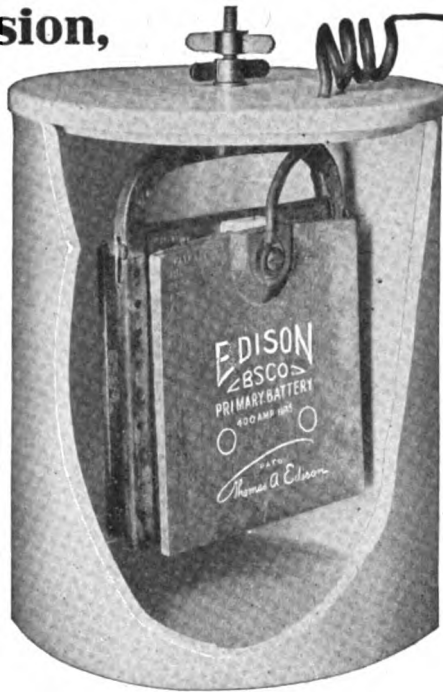
How should a connection be made between wire and binding post to be firm?

What is the proper way to mend defective flexible cords? (page 328).

(To be continued.)

Clear Transmission, Always Necessary, Warrants Use of the Highest Grade Battery

A low internal resistance battery that will not polarize, and maintains constant voltage, is sure to give better results in telephone work than a set of cells whose voltage constantly drops when on discharge, or in which the voltage is high or variable.



The Edison Primary Cells

maintain a lower uniform internal resistance than any other primary type; they furnish constant voltage and do not polarize at normal discharge rates; the 400 ampere hour size has a life greater than twenty single sets of dry cells and they require no attention between recharges, even though the service is such that a period of years is required to consume their capacity.

Type 403 400 Ampere Hours Capacity

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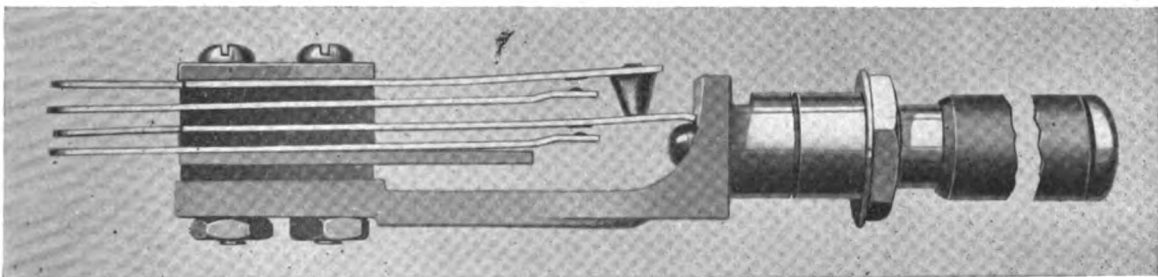
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Strong, Substantial Jacks for all Purposes

Not lightning proof, of course, but as nearly so as Jacks can be.



Actual size—plug inserted.

Made in a wide variety of contact combinations.

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The Universal Selector for Telegraph and Telephone.

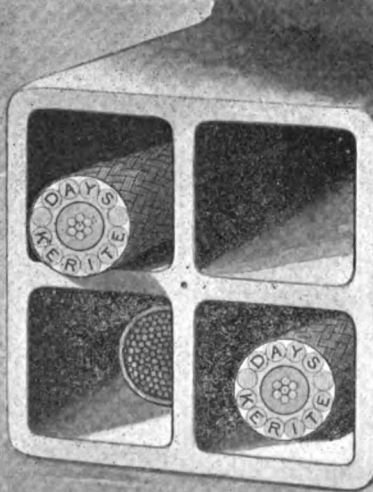
A Significant Fact

Of the three Cables in the Trans-Isthmian Duct Line, one is a paper-lead telephone cable- the other two are

KERITE

(taped and braided)-the Panama Railroad's signal cable, and the Central and South American Telegraph Company's connection between its Atlantic and Pacific cables.

The severity of the conditions and the importance of the service, determined the selection of Kerite for these installations



KERITE INSULATED WIRE & CABLE **COMPANY**
NEW YORK CHICAGO

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THE RAILROAD.

MR. E. C. KEENAN, whose appointment as general superintendent of telegraph, New York Central Railroad Company, was announced in our June 1 issue, has jurisdiction over all of the New York Central lines. His headquarters will be in New York.

MR. E. E. CALVIN, vice-president of the Sunset Railway and vice-president and general manager of the Oregon Short Line, and an old-time operator, has been elected president of the Union Pacific Railroad. He was born in 1858 and began his railroad career as a telegraph operator in 1875. In 1882 he was employed as an operator and station agent on the Union Pacific. He was at various times conductor, train dispatcher and train master and has filled many higher railroad positions.

Programme of the Convention and Entertainment.

Following is the official programme of the convention and of the entertainment features:

Monday, June 19, 8 p. m.—Informal reception, dancing, etc., Hotel St. Paul.

BUSINESS SESSIONS.

TUESDAY, JUNE 20—10:00 a. m. to 11:00 a. m.—Registration, Minutes, Addresses, Announcements.

11:00 a. m. to 12:00 m.—Election of Members. Reports of Officers, Executive Committee and Standing Committees.

1:30 p. m. to 3:00 p. m.—Special Committee No. 1, "Construction and Maintenance, Outside Plant." Mr. G. A. Cellar, Chairman.

3:00 p. m. to 4:30 p. m.—Special Committee No. 2, "Construction and Maintenance, Inside Plant." Mr. M. H. Clapp, Chairman.

WEDNESDAY, JUNE 21—10:00 a. m. to 11:00 a. m.—Special Committee No. 3, "Wire Chief Equipment and Routine." Mr. E. A. Chenery, Chairman.

11:00 a. m. to 12:00 m.—Special Committee No. 4, "Protection Against Electrolysis." Mr. Wm. Bennett, Chairman.

1:30 p. m. to 2:30 p. m.—Special Committee No. 5, "Protection Against Lightning and High Tension Circuits." Mr. J. F. Caskey, Chairman.

2:30 p. m. to 3:30 p. m.—Special Committee No. 6, "Telephone Development." Mr. F. F. Riefel, Chairman.

3:30 p. m. to 4:30 p. m.—Executive session.

THURSDAY, JUNE 22—9:30 a. m. to 10:30 a. m.—Special Committee No. 7, "Railroad Message Traffic." Mr. W. H. Hall, Chairman.

10:30 a. m. to 11:00 a. m.—Special Committee No. 8, "Full Use of Wires." Mr. E. P. Griffith, Chairman.

11:00 a. m. to 12:00 m.—Special Committee No. 9, "Wireless Telegraph and Telephone Development." Mr. L. B. Foley, Chairman.

1:30 p. m. to 2:00 p. m.—Special Committee No. 10, "Places for Annual Meeting." Mr. L. A. Lee, Chairman.

2:00 p. m. to 4:00 p. m.—Election and Installation of Officers.

ENTERTAINMENT.

TUESDAY, JUNE 20—12:30 p. m.—Luncheon for Ladies at Field Schlick and Company's Tea Rooms.

2:00 p. m.—Theatre party in afternoon for ladies.

5:30 p. m.—Entire party leave St. Paul on trolley cars for Wildwood, where dinner will be served.

WEDNESDAY, JUNE 21—12:30 p. m.—Luncheon for ladies at Minnesota Club.

2:00 p. m.—Sightseeing automobile ride for ladies.

7:30 p. m.—Banquet at Hotel St. Paul.

THURSDAY, JUNE 22—12:30 p. m.—Luncheon for ladies on roof garden, Hotel St. Paul.

2:00 p. m.—Remainder of day to be devoted to shopping or such other recreation as ladies may see fit.

FRIDAY, JUNE 23—10:00 a. m.—Entire party leave Fifth and Wabasha Streets in special trolley cars for Minnetonka Beach and steamer ride on Lakes. Luncheon at Hotel "The Otro," returning to St. Paul about 5:00 p. m.

Following are the committees:

Entertainment—E. J. Little, Chairman. H. A. Tuttle, Geo. Boyce, W. P. McFarlane, B. A. Kaiser, A. G. Francis, G. A. Graber.

Local Committee—C. A. Crane, L. H. Merrill, Val B. Minton.

Ladies' Reception Committee—Mrs. M. H. Clapp, Mrs. C. A. Crane, Mrs. William Bennett, Mrs. L. H. Merrill, Mrs. A. D. Walters.

Lehigh Valley's New Offices at Buffalo.

Imagine a large force of telephone and telegraph operators suddenly laying down their receivers and abandoning their keys, donning their hats and wraps and quitting their quarters. Picture the offices they leave as being located at the terminal of an important railroad. This sounds serious, and one would almost expect the railroad to cease operation—for a while, anyhow. But it did not—not even for a moment. The force was that of the Lehigh Valley Railroad at Buffalo. The quarters they left were in the old passenger station which has done duty for the railroad since the line entered Buffalo. When they left it they proceeded directly across the street to offices in the handsome new passenger station now practically completed. When they got there everything was in readiness for them. There were new switchboards and a great deal of other equipment of the most modern variety, but the operators had no difficulty in finding themselves. The wires were working just as they had left them and not a railroad wheel had ceased turning while they journeyed from the old to the new station.

The wire arrangements in the new station are pronounced ideal. A feature of special interest to Buffalo is the fact that none of the wires go overhead until well outside of the city. They are carried in conduits under the streets and the new train sheds, avoiding the unsightly open wire telegraph pole lines in the vicinity of the terminal.

CHEAP ELECTRICITY.—The great desideratum in these days is to produce electricity as cheaply as possible so as to make it available for all household purposes. Here is a chance for those who would like to experiment along those lines.

Statistics of Meetings of Association of Railway Telegraph Superintendents.

The following table shows the number, date and places of the annual conventions of the Associa-

tion of Railway Telegraph Superintendents from the first meeting up to the present time; also the names of the president, vice-president and secretary-treasurer for each year throughout the entire period.

No.	Date	Year	Place	President	Vice-President	Secretary-Treasurer
1	Nov. 20	1882	Chicago, Ill.	W. K. Morley	W. Kline	C. S. Jones
2	June 3	1883	Chicago, Ill.	W. K. Morley	C. Selden	P. W. Drew
3	Sept. 17	1884	Philadelphia, Pa.	C. Selden	E. C. Bradley	P. W. Drew
4	June 17	1885	Cleveland, Ohio	C. W. Hammond	G. L. Lang	P. W. Drew
5	June 16	1886	St. Paul, Minn.	A. R. Swift	G. L. Lang	P. W. Drew
6	July 13	1887	Boston, Mass.	G. L. Lang	G. C. Kinsman	P. W. Drew
7	July 11	1888	New York.	G. C. Kinsman	C. A. Darlton	P. W. Drew
8	Oct. 16	1889	Washington, D. C.	C. A. Darlton	G. T. Williams	P. W. Drew
9	June 18	1890	Niagara Falls, N. Y.	G. T. Williams	G. M. Dugan	P. W. Drew
10	June 17	1891	Cincinnati, Ohio	C. S. Jones	L. H. Korty	P. W. Drew
11	June 15	1892	Denver, Col.	L. H. Korty	U. J. Fry	P. W. Drew
12	June 20	1893	Milwaukee, Wis.	U. J. Fry	O. C. Greene	P. W. Drew
13	June 13	1894	Detroit, Mich.	O. C. Greene	E. R. Adams	P. W. Drew
14	June 12	1895	Montreal, Can.	M. B. Leonard	J. W. Fortune	P. W. Drew
15	June 17	1896	Old Point Comfort, Va.	G. M. Dugan	J. W. Lattig	P. W. Drew
16	June 16	1897	Niagara Falls, N. Y.	J. W. Lattig	W. W. Ryder	P. W. Drew
17	June 15	1898	Omaha, Neb.	W. W. Ryder	L. B. Foley	P. W. Drew
18	May 17	1899	Wilmington, N. C.	L. B. Foley	W. F. Williams	P. W. Drew
19	June 20	1900	Detroit, Mich.	W. F. Williams	C. F. Annett	P. W. Drew
20	June 19	1901	Buffalo, N. Y.	C. F. Annett	F. P. Valentine	P. W. Drew
21	June 18	1902	Chicago, Ill.	J. H. Jacoby	W. J. Holton	P. W. Drew
22	May 13	1903	New Orleans, La.	C. S. Rhoads	C. P. Adams	P. W. Drew
23	June 15	1904	Indianapolis, Ind.	H. C. Hope	E. E. Torrey	P. W. Drew
24	May 17	1905	Chattanooga, Tenn.	E. E. Torrey	E. A. Chenery	P. W. Drew
25	June 20	1906	Denver, Col.	E. A. Chenery	E. P. Griffith	P. W. Drew
26	June 19	1907	Atlantic City, N. J.	E. P. Griffith	W. J. Camp	P. W. Drew
27	June 24	1908	Montreal, Can.	W. J. Camp	G. W. Dailey	P. W. Drew
28	June 23	1909	Detroit, Mich.	J. L. Davis	I. T. Dyer	P. W. Drew
29	June 20	1910	Los Angeles, Cal.	I. T. Dyer	J. B. Sheldon	P. W. Drew
30	June 26	1911	Boston, Mass.	G. A. Cellar	W. Bennett	P. W. Drew
31	June 4	1912	New York.	J. B. Sheldon	W. Bennett	P. W. Drew
32	May 20	1913	St. Louis, Mo.	W. Bennett	A. B. Taylor	P. W. Drew
33	May 19	1914	New Orleans, La.	W. C. Walstrum	E. C. Keenan	P. W. Drew
34	June 22	1915	Rochester, N. Y.	E. C. Keenan	L. S. Wells	P. W. Drew

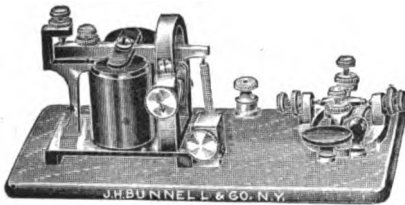
The following classification shows the places, alphabetically arranged, where the conventions have been held and the years:

Atlantic City, N. J., 1907.
 Boston, Mass., 1887, 1911.
 Buffalo, N. Y., 1901.
 Chattanooga, Tenn., 1905.
 Chicago, Ill., 1882, 1883, 1902.
 Cincinnati, Ohio, 1891.
 Cleveland, Ohio, 1885.
 Denver, Col., 1892, 1906.
 Detroit, Mich., 1894, 1900, 1909.
 Indianapolis, Ind., 1904.
 Los Angeles, Cal., 1910.
 Milwaukee, Wis., 1893.
 Montreal, Que., 1895, 1908.
 New Orleans, La., 1903, 1914.
 New York, 1888, 1912.
 Niagara Falls, N. Y., 1890, 1897.
 Old Point Comfort, Va., 1896.
 Omaha, Neb., 1898.

Philadelphia, Pa., 1884.
 Rochester, N. Y., 1915.
 St. Louis, Mo., 1913.
 St. Paul, Minn., 1886.
 Washington, D. C., 1889.
 Wilmington, N. C., 1899.

TWENTIETH CENTURY MANUAL OF RAILWAY, COMMERCIAL AND WIRELESS TELEGRAPHY is the title of a practical book for railroad telegraph men and dispatchers, by F. L. Meyer. Every branch of the service has been handled in a practical and masterly manner, and the information given is the result of wide observation and experience. It is a complete education in railroad telegraphy, from first principles to the finished operator, who can be relied upon to do things in emergencies. It has a chapter on wireless telegraphy. Price \$1.00. For sale by TELEGRAPH AND TELEPHONE AGE, 253 Broadway, New York.

Dispense With Expensive and Troublesome Local Batteries

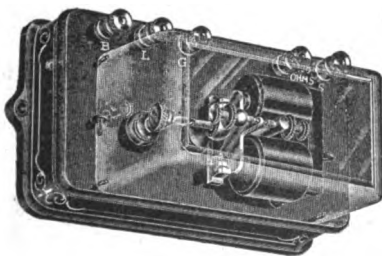
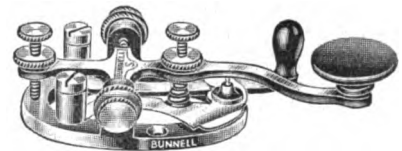


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Get interested and ask us about them.

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We are the people who gave tongue to Tungsten for Telegraph work. Beware of imitations using tungsten discs with steel shanks that will soon rust and become useless. Our perfected contacts are different and guaranteed not to rust.



Remember that with the GHEGAN "KICK-OFFS"

at terminal stations, communication with and between way stations on leaky lines is always possible. Try them and be convinced.

*Don't forget us when you want anything in
the line of telegraph apparatus or supplies*

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Marconi Wireless Telegraph Company

of America

Continent to Continent
Shore to Ship Ship to Ship

LESS than 19 years old commercially, Marconi Wireless is already indispensable in the maritime field, and invaluable in others. Marconi service is dependable under all conditions and embraces activities and localities inaccessible to ordinary telegraph systems. It is especially valuable in case of prostration of pole lines along railways for transmitting running orders to moving trains.

Marconigrams are regularly transmitted to United Kingdom, Hawaii and Alaska, also to ships at sea; and preparatory tests are now being made for extending the service to Japan.

Marconi Service Is Swift
Accurate and Economical



Executive Office, Woolworth Building, New York—Works at Aldene, New Jersey

The Problem of Transposition Systems.

BY M. H. CLAPP, SUPERINTENDENT OF TELEGRAPH,
NORTHERN PACIFIC RAILWAY, ST. PAUL, MINN.

The presence of the phenomenon of induction of different kinds and the necessity, on account of these disturbances, of a system of transpositions in connection with telephone circuits have been known almost from the beginning of the art of telephony. The number of these interferences has, during the past few years, increased greatly and transposition systems which were formerly simple are now very complex.

Cross-talk between telephone circuits in close proximity is the most interesting of the different inductive effects of circuits on one another and it was one of the first to be encountered and overcome. This form of induction was supposed in the earlier days of telephony to be entirely electromagnetic. Mr. J. J. Carty showed conclusively, however, in 1889, in some very interesting experiments that cross-talk between telephone circuits is due entirely to electrostatic induction. It is now a familiar fact that cross-talk will always occur between two or more circuits placed close together for any considerable distance on the same pole line, unless provisions are made to prevent it. There are two conditions under which cross-talk will not be produced on a telephone circuit by the passage of alternating or varying currents on a neighboring wire. The first condition is fulfilled when the neighboring wire is located at an equal distance from the two sides of the telephone circuit. This condition is obviously impossible to realize except in the case of one disturbing wire in connection with one metallic circuit. The second condition is fulfilled when the telephone circuits are frequently transposed; that is, the positions occupied by two wires on a pole line are interchanged. The use of transpositions in order to avoid cross-talk is entirely practicable and is universally utilized in connection with all telephone lines. Although in theory the current induced in a metallic circuit from another circuit by electrostatic induction can only be eliminated by using an infinite number of transpositions, it has been found that transpositions placed in circuits at a minimum distance apart of a quarter of a mile, and at a maximum distance apart of two miles, are sufficient to render cross-talk unnoticeable. After two or three different plans had been tried, a satisfactory system of transpositions was finally developed which provides on a single pole line for eighty wires, or forty physical telephone circuits.

While it is possible to overcome the induction or cross-talk between telephone circuits, it has been much more difficult to prevent induction on these circuits from near-by power and electric light wires. It is practically impossible in some cases to remove entirely interference of this kind. Power induction, as in the case of cross-talk, is more an electrostatic effect than electromagnetic, and under normal operating conditions it arises almost wholly from the harmonic voltages and currents of the power system. Inductive interferences, due to power circuits having balanced voltages and currents, can

usually be prevented by proper systems of transpositions applied to both the telephone and power circuits. Transpositions are, in general, not very effective in connection with power circuits having large residual voltages and currents, although the induction from these circuits can often be reduced by transposing the telephone circuits. On account of the dissimilarity of power and lighting circuits, due to differences in voltages and periodicities of currents, and to various arrangements of apparatus and circuits, all of which tend to produce different combinations of harmonics, it is very evident that many complications are encountered when attempt is made to devise means of preventing induction between power and telephone circuits.

Referring again to cross-talk between telephone circuits, the creating of phantom circuits and the use of loading coils increase the tendency for cross-talk and in both cases special transpositions are usually necessary. They are especially necessary when phantom circuits are placed on a line. It is then essential not only to provide a definite transposition combination for each phantom circuit created, which, in general, must be different from all other circuits on the line, but it is necessary to balance the phantoms with respect to the physicals of which it is composed and with respect to all other physical and phantom circuits with which it is associated. It is also difficult to select the necessary number of transposition circuit combinations in connection with a standard eight mile section which balance sufficiently with one another so they can safely be used without causing serious cross-talk. When loading coils are placed on the line, it is necessary to locate them at neutral points and at equal distances from one another. It is often necessary to retranspose considerable lengths of line in order to meet these conditions. Having in mind that a complete system of transpositions usually provides for forty physical and twenty phantom circuits, and for the loading of all circuits, including the phantoms, it is evident that the placing of phantoms and loading coils on the line adds to the complexity of a transposition system.

Considering further the intricacies of our subject, we have the effect of telegraph wires on telephone circuits. This phase of the subject is one in which the railroads are particularly interested. Not much difficulty, in general, is experienced from induction due to single line telegraph circuits. Serious interference, however, is obtained from high speed multiplex and printer circuits unless special precautions are taken by putting in additional transpositions in the telephone circuits and special circuit arrangements in the telegraph equipment. Telegraph induction does not appear at present to have been entirely overcome, especially in connection with phantom circuits. This problem, however, does not appear to be any more difficult than others which have been solved in the past few years. It is reasonable to expect, therefore, that in the future a system of transpositions will be provided which will properly meet the condition of having both telegraph and telephone circuits on the same pole line.

From the preceding paragraphs, I believe that it

is evident that the problem of providing a satisfactory system of transpositions is fraught with great difficulties. Beginning with the comparatively simple matter of the consideration of cross-talk between a few telephone circuits, it is now necessary to have in mind the effect of a large number of circuits, not only telephone, but different extraneous circuits which are liable to be intimately associated with the telephone circuits. Formerly the consideration of a few hundred possible inductive exposures would have been ample; now it is necessary to consider literally thousands of possibilities in solving the problem of providing an adequate system of transpositions which will meet all conditions.

***Wire Testing an Exact Science.**

BY R. M. TELSCHOW, ASSISTANT CHIEF OPERATOR,
POSTAL TELEGRAPH-CABLE COMPANY,
NEW YORK.

"Even small old iron wires have no terrors for the Wheatstone bridge, though they may be covered with ice and sleet," says Albert J. Ward, the eastern wire chief in the main office of the Postal Telegraph-Cable Company, New York. Mr. Ward ought to know, because his work at the switchboard has been remarkably efficient under the varying conditions to which all wire systems are subject.

Locating opens, grounds, crosses and escapes; insulation, conductivity, resistance and capacity tests under the magic spell of his skill become simple exercises which always yield tangible results.

It must not be assumed from the foregoing, however, that given a Wheatstone bridge, a pencil and a sheet of paper, and a nice, shiny brass switchboard anyone could do that little trick known as "locating a fault." The Wheatstone bridge will find in a surprisingly accurate manner the location of line trouble, but it's another case of "the man behind the gun." The mental alertness and preparedness of the individual at the board is an important factor in securing precise measurements.

The wire chief must possess a thorough knowledge of the instruments and formulas at his command and know the character of his circuits to a nicety; likewise the country through which the wires are strung, as well as the personal habits and capabilities of the linemen under his direction. In the course of his daily work he becomes so familiar with the wires under his charge that he can quickly tell if they are "under the weather" or not. He learns the weak spots on the line and studies details of localities in his district in much the same manner as a train dispatcher does the grades and curves of his railroad.

Winter is always a trying season for wire chiefs, owing to the frequency of storms and the consequent havoc wrought by them. The satisfactory maintenance of telegraph circuits is rendered extremely difficult, and their continued operation made possible only by a succession of rapid repairs through the good work of qualified wire chiefs.

On the morning of March 6, Mr. Ward sent the following orders to Lineman Stultz, at Hartford, Conn.: "Swinging cross on 6 and 13 all day Sat-

urday. I measured it near Franklin Avenue. Wish you would cover them today, and see if you can find it."

Several hours later the lineman reported that he had cleared the swing on 6 and 13 at Franklin Avenue, and stated the cause of the trouble was the setting of a pole in line by the electric light company. Mr. Ward, seated in the New York operating room, measured the trouble 150 miles distant, which he figured must be in the neighborhood of Franklin Avenue, Hartford.

A test made on March 9 resulted in the sending of this message to Lineman Smith, at Meriden, Conn.: "Come south for break on number 8, south end crossing 15. I make it in Prospect. Go to Cheshire on trolley for test." Prospect is a hamlet 107 miles from New York.

The lineman's report follows: "March 9. Covered section Cheshire to break on 8, three miles east of Bethany Center test pole, in Prospect. Trouble caused by sleet and heavy wind. Smith, Meriden, Conn."

Another test of remarkable exactness resulted on March 2 in finding the break on No. 3 East, which also crossed Nos. 27 and 28 at a point 5.25 miles south of Glenville, Conn. Mr. Ward's measurement indicated the trouble to be 40 miles away, or about 5.47 miles south of Glenville, and instructions were sent accordingly.

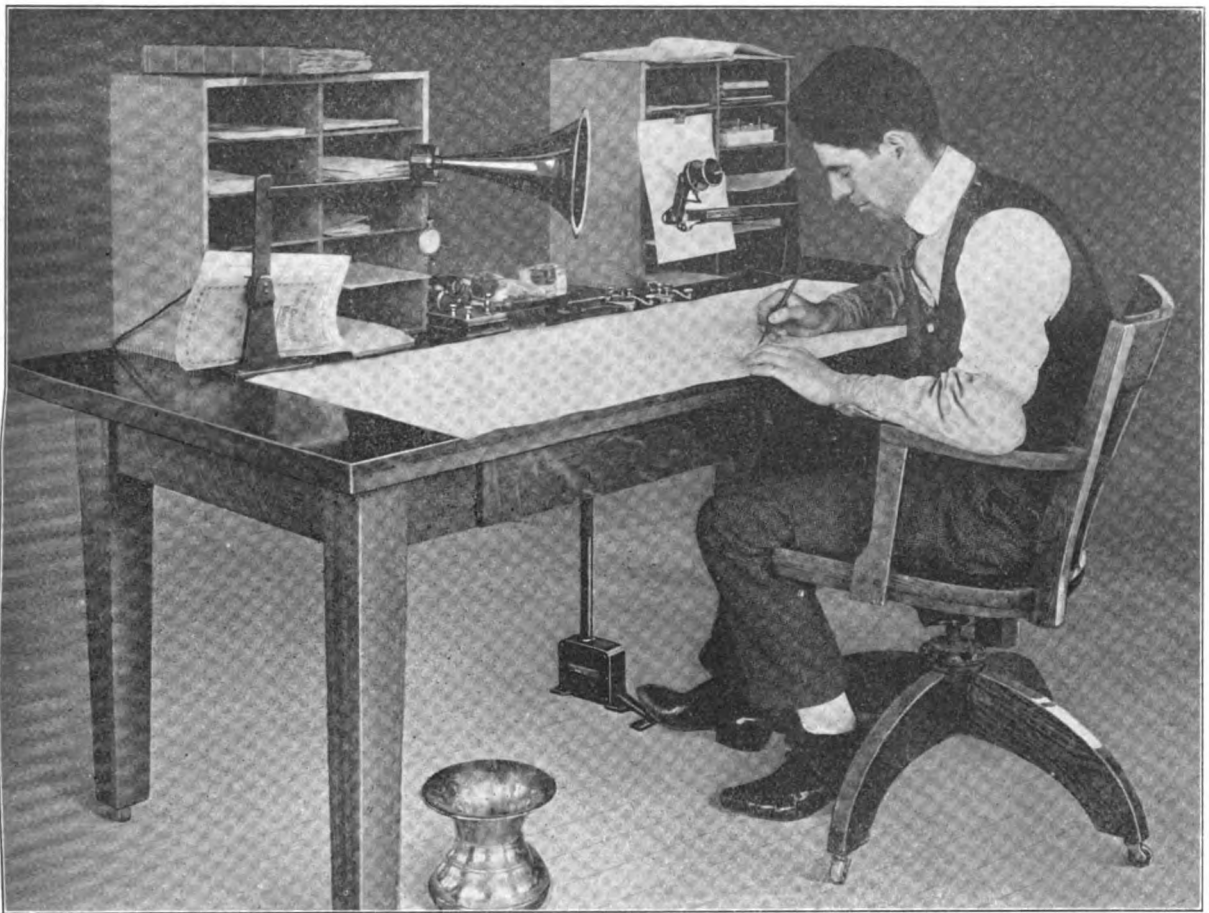
Mr. Ward is still a young man and has a bright future ahead of him. The above may appear to be random shots, but Mr. Ward, in his modest way, says, "These accurate hits are everyday occurrences." Those who know him do not doubt his statement.

J. H. Twyford, Southern wire chief in the New York operating room, is also making enviable records for the accurate location of line troubles. His records show that by the skillful use of the galvanometer on the New York-Conshohocken line, which is 131.3 miles in length, he saved in the year 1914 the sum of \$160.50, and in the year 1915 the sum of \$121.75, and also restored the wires more rapidly to full use than if his location of faults had been less accurate.

A BUSINESS PROPOSITION IN INSURANCE.—In a letter to the members of the Telegraph and Telephone company. In 1881 he was appointed wire H. Baker gives some timely information and advice regarding the work and benefits of the association. "Members should be alive in the fullest measure to their obligations," he says. "No opportunity should be lost to impress on their eligible acquaintances the merits and advantages of membership, and that, as a plain business proposition, they should earnestly work for the association from which their dependents will, in due time, be so largely benefited."

Mr. W. A. Stallings, manager of the Postal Telegraph-Cable Company of Texas, Beaumont, Tex., in remitting to cover a renewal of his subscription writes: "TELEGRAPH AND TELEPHONE AGE is a welcome visitor to our doors."

*Postal Telegraph.



Stentor Loud-Speaking Dispatcher's Set

This set can be applied to existing telephone circuits, in dispatcher's office, or at any point of line.

Complete Stentor equipment for new circuits, to meet all conditions of railroad operation, dispatchers' lines, yard circuits, block signal circuits, message circuits, inter-communicating systems, etc.

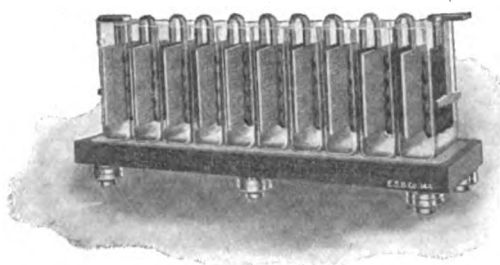
We manufacture a complete line of telephone equipment for all purposes, both of the standard type instruments and for loud speaking service.

STENTOR ELECTRIC MFG. CO., INC.
NEW YORK

E-CONOMY

C-ONVENIENCE

R-ELIABILITY



10 Cells, "Chloride-Accumulator" type BT, on Wood Sand Tray

By the use of modern, simple charging apparatus,
a storage battery is the most economical and
reliable for selector calling service.

IT WILL PAY YOU TO INVESTIGATE

THE ELECTRIC STORAGE BATTERY CO.

Manufacturer of

The "Chloride-Accumulator", The "Tudor Accumulator"

The "Exide", "Nycap-Exide", "Thin-Exide" and "Ironclad-Exide" Batteries

New York	Boston	Chicago	Washington	PHILADELPHIA, PA.	Rochester	Detroit	St. Louis
Cleveland	Atlanta	Pittsburgh	1888-1916	San Francisco	Denver	Toronto	

Statistical Information Regarding Telephone and Telegraph Train-Dispatching on Railroads in the United States and Canada.

Corrected to June 1, 1916.

NAME OF RAILROAD	Name of Superintendent of Telegraph	Total mileage	TELEPHONE	TELEGRAPH	Telephone mileage increase during previous 12 months
			Total mileage operated by telephone	Total mileage operated by telegraph	
Atchison, Topeka and Santa Fe.....	L. M. Jones.....	10,910	7,848	3,061	9
Chicago, Burlington and Quincy.....	V. T. Kissinger.....	9,264	3,566	5,698	57
Central Vermont	M. Magiff.....	536	365	170	8
Central of Georgia	G. L. Candler.....	1,923	548	1,376	110
Chesapeake and Ohio	C. W. Bradley.....	2,376	1,605	312	0
Chicago, Rock Island and Pacific.....	C. H. Hubbell.....	8,201	2,218	5,430	0
Chicago, Terre Haute and Southeastern.....	F. H. Van Etten.....	365	176	189	5
Colorado and Southern	J. L. Henritzy.....	1,828	0	1,571	0
Illinois Central, North of Ohio River.....	F. T. Wilbur.....	2,994	1,536	1,458	23
Louisville and Nashville	R. R. Hobbs.....	5,037	2,490	2,088	230
Oregon-Washington R.R. and Navigation Co.....	E. A. Klippel.....	2,054	679	1,317	0
Pennsylvania Lines West of Pittsburgh.....	G. A. Cellar.....	4,983	451	4,463	87
Pittsburgh and Lake Erie.....	L. A. Lee.....	225	225	0	4
Pittsburgh, Shawmut and Northern	C. L. Lathrop.....	277	133	151	7
Southern Pacific and Arizona and Eastern.....	E. L. King.....	6,952	973	5,863	131
Seaboard Air Line	W. F. Williams.....	3,482	2,131	1,351	342
St. Louis and San Francisco.....	H. D. Teed.....	4,748	1,765	2,827	42
Temiskaming and Northern Ontario.....	W. J. Kelly.....	328	266	64	0
Texas and Pacific	Frank Tremble.....	1,944	340	1,604	269
Terminal Railroad Assn. of St. Louis.....	F. E. Bentley.....	31	13	18	13
Totals.....		58,458	27,328	39,011	1,337
Totals for 1915.....		212,622	83,365	125,147	4,443
Totals for 1914.....		204,526	76,664	126,232	9,908

In the foregoing table only those roads reporting changes are given. They are twenty in number, against seventy-one reporting changes in the year previous. The figures of the twenty roads show a net increase of 1,337 in the mileage of telephone train dispatching circuits, and a net decrease of 1,544 miles in telegraph train dispatching. Fifty-three report no changes during the past year. There was a decrease of eighty miles of telephone dispatching on three roads, and an increase of 1,337 on seventeen roads; and a decrease in telegraph dispatching of 1,554 miles on twelve roads and an increase of 699 miles on seven roads, one road reporting no change. With these changes the grand totals for 1915 on the seventy-one roads are as follows: Telephone dispatching 84,622 miles; telegraph dispatching 124,292 miles.

Mr. Charles Selden of the Baltimore and Ohio System states that there will be an addition of 195 miles of telephone train dispatching circuits which were installed on the Ohio Division during the past year. Work has already been started on additional telephone dispatching circuits.

Mr. E. P. Griffith of the Erie Railroad, New York, states that while there has been no change in the figures covering the telegraph and telephone facilities on his road during the past twelve months, 325 miles of road are under work and 423 miles under estimate.

Mr. Geo. W. Jett, superintendent of telegraph, Norfolk and Western Railroad, Roanoke, Va., reports an increase of thirty-seven miles of telephone dispatching circuits during the year. The telegraph mileage remains the same.

Mr. F. G. Sherman, of the Central Railroad of New Jersey, New York, states that the company is holding up a proposed addition of 156 miles on account of the high price of copper.

Mr. C. S. Rhoads of the Big Four, Indianapolis, Ind., has added to his wire facilities 125 miles of talking and message circuits for railroad use.

Mr. E. A. Klippel, of the Oregon-Washington Railroad and Navigation Company, reports that fifty-eight miles of his road are dispatched by yard and time card rules.

One of the effects of the feeling of general uncertainty in railroad circles which has prevailed for the past year is shown in the very small extension of telegraph and telephone facilities on railroad lines. Of course many of the roads a year ago had practically all the telegraph and telephone facilities that they required and they would have done little extension work even if conditions had been normal, but that cannot account entirely for the great lack of activity during the past year. Those roads that have made extensions are few compared with the whole and these extensions probably have been

made because funds were available, and not from new appropriations. It is true that many of the railroad systems have authorized extensions of telephone train-dispatching circuits but the active work for one reason or another has not been commenced.

The high price of copper is also a factor in the non-extension of telephone train dispatching facilities, there being more important uses to which the companies' moneys can be applied. The present facilities can be utilized to bridge over the period when the cost of all construction material is much greater than it should be. It is therefore a question of waiting and saving money.

The foregoing list shows only those roads that have made changes and a comparison with the figures of last year's statement shows that the changes have been very slight indeed.

Reunion of Military Telegraphers and Old Timers.

Arrangements are rapidly being made for the thirty-fifth annual reunion of the Old-Time Telegraphers and Historical Association and for the fifty-fifth anniversary of the Society of the United States Military Telegraph Corps, which will be held conjointly at the Hotel McAlpin, New York, September 26, 27 and 28.

In order to partly meet the expense of entertainment it has been decided by the New York local committees to collect five dollars from each person participating in the exercises of the reunion.

It has also been decided that in order to facilitate the work of the committees in arranging for the various entertainments, and to give them an idea as to how many will attend the reunion so that proper provision can be made, that members intending to be present shall remit as a registration fee one dollar (of the total amount of five dollars), not later than August 1, to Mr. R. J. Murphy, chairman of the registration committee, 16 Dey Street, New York. Upon arrival at the convention the members will, on registration at the hotel, receive tickets to the various entertainments, including the banquet, upon payment of the additional four dollars.

The officers of the Old-Time Telegraphers and Historical Association are: President, Andrew Carnegie; vice-presidents, David Homer Bates, Charles P. Bruch, Thomas A. Edison, J. Frank Howell, Edward J. Nally; secretary and treasurer, F. J. Scherrer, 30 Church Street, New York.

The officers of the Society of the United States Military Telegraph Corps are: President, Colonel William Bender Wilson; vice-presidents, William L. Ives, Charles Almerin Tinker, Richard O'Brien; secretary and treasurer, David Homer Bates, 658 Broadway, New York.

Mr. P. J. Casey, Room 206, No. 1400 Broadway, New York, is chairman of the hotel committee.

Following are some of the principal committees:

General Committee on Arrangements: Charles P. Bruch, chairman; Wm. H. Baker, Mrs. Jas. R. Beard, P. J. Casey, Lewis Dresdner, Thos. E. Fleming, Gardner Irving, E. J. Nally, Richard J. Murphy, J. B. Taltavall.

Committee on Finance: Wm. H. Baker, chairman; Lewis Dresdner, treasurer; David Homer Bates, F. F. Fitzpatrick, J. Frank Howell, Edward W. McKenna.

Committee on Entertainment: Thos. E. Fleming, chairman; Jas. R. Beard, T. A. Brooks, J. Costelloe, Theo. L. Cuyler, Jr., S. H. Flagler, E. P. Griffith, Geo. W. Hickey, C. Jacobson, A. C. Kaufman, C. A. Kilfoyle, T. A. McCammon, F. E. McKiernan, D. F. Mallen, Jas. F. McGuire, M. J. O'Leary, M. W. Rayens, Thos. G. Singleton, E. B. Sayler, F. J. Sheridan, Daniel Skelton, A. O. Wallis.

Committee on Banquet: E. J. Nally, chairman; P. J. Casey, T. E. Fleming, R. J. Murphy, F. J. Scherrer, J. B. Taltavall.

Committee on Hotels: P. J. Casey, chairman, 1400 Broadway, New York City; Edward L. Cohn, James F. Nathan, M. M. Davis, John Doran, M. W. Hamblin, E. F. Howell.

Committee on Registration: Richard J. Murphy, chairman, 16 Dey Street, New York; J. W. Connolly, A. Dougherty, M. J. Kenna, Wm. J. Quinn.

Mr. Gardner Irving is chairman of the Committee on Reception and Mrs. James R. Beard of the Ladies' Committee on Reception.

The Reception Committee of the Society of the United States Military Telegraph Corps consists of Charles A. Tinker, chairman; Henry H. Atwater, David Homer Bates, Jr., Charles P. Bruch, Albert E. Chandler, Jesse W. Crouse, Henry W. Dealy, J. Clendenin Eckert, J. Clendenin Eckert, Jr., Douw H. Fonda, Richard Graham, George B. Hatter, O. C. Hatton, William L. Ives, Verdie J. Knittle, Isaiah D. Maize, Edward R. Maize, Albert W. Orton, Charles W. Pearson, Charles O. Rowe, H. P. Royce, Charles D. Ryan, E. Alex. Scott, Frank A. Stumm, Arthur L. Tinker, John Wintrup.

Mr. Verdie J. Knittle has been appointed acting chairman of the reception committee in view of the expected absence from the city at that time of the chairman, Mr. Charles A. Tinker.

Galvanometer Design.

Galvanometers are instruments for the detection or measurement of small electric currents or small voltages and are much used in various kinds of electrical testing. The user of such an instrument is concerned with its sensitivity either to current or to voltages, its period, etc.; that is, he is concerned with its performance or operation constants. These necessarily depend upon the intrinsic or construction constants, which in turn depend upon the size, shape, kind of material, etc., of the parts.

These matters are discussed and illustrated by concrete examples in a paper just published by the Bureau of Standards. Copies of the paper, Scientific Paper No. 273, may be had on request addressed to the Director, Bureau of Standards, Washington, D. C.

Mr. John Nering, manager, Postal Telegraph-Cable Company, Chicago, Ill., writes: "I am glad to be a subscriber to your publication."

Wireless on Railroads.

Since the successful demonstration of the Marconi equipments on the Lackawanna Railroad wireless communication has become one of the most interesting subjects discussed before and by the railroad telegraph superintendents at their annual conventions and other meetings.

Emphasis is laid on the fact that the wireless telegraph serves as an auxiliary means of communication, in the event of interruption to wire facilities. Its practicability has been thoroughly tested and that the wireless system has met the demands placed upon it has been clearly proven in the past.

Railroad telegraph superintendents are studying this subject closely and watching the development of the wireless art, which is making rapid progress.

A committee on wireless appointed by the president of the Association of Railway Telegraph Superintendents has submitted its report for the year and this interesting review of the subject will be read and discussed at the coming meeting of the association to be held in St. Paul.

Censoring Telegrams on Railroads.

The subject of censoring railroad telegrams is an important one and will come up for consideration at the St. Paul convention. Many officials do not believe that censoring is as good and as satisfactory to all concerned as the use of a standard short-cut code, especially for the passenger and freight departments of a railroad. A code so condensed that one, two or three words would be sufficient to express a sentence would be preferable to censoring, which at best tends to create an unfriendly feeling between the telegraph and other departments. The Dempsey Code seems to meet all of the requirements of railroad business, and it is printed in the form of sheets, as well as in book form, so that each department has its own section of the code hanging up for immediate reference. This does away with the necessity of hunting through the book for any one department code.

Regarding economy of operation, it is said that this code will reduce the commercial tolls of railroads fifty-four per cent, and on road wires seventy-eight to eighty per cent. It accomplishes a maximum amount of reduction with a minimum amount of time, and can of course be adapted for the individual use of roads, including localisms, etc.

At the present time all sorts of code books are used by the railroad companies, no less than sixty-seven being employed, including twenty-seven special codes, and few if any of them are adapted to the uses to which they are put. There is nothing gained in furnishing an expensive general code to a railroad official who finds that in a book of several hundred pages there are only a very few pages that are of any use to him. It seems to us that there is no good reason why a uniform standard code could not be arranged to cover most of the routine railroad traffic. This is the traffic that chokes the wires. Of course the secret codes in use by the higher officials are in a class by themselves and are not considered here.

Telegraph Oddities.

A customer recently entered a telegraph office and stated that he wished to not only send a contribution of flowers to show his esteem for a dead friend at a distant point but he wished the company would have one of its employees represent him at the funeral services by his presence dressed in black clothes including a black crepe neck tie.

A telegrapher by the name of Neversick was an applicant for a position. His name secured for him immediate employment.

The delivery clerk himself consolingly handed a telegram to a customer and very feelingly stated that it announced the death of his mother-in-law. The recipient replied: "All right, I will not open it until I think the old lady has been planted."

A newspaper in Minnesota states that it regards a telegraph company as having endorsed a candidate when it permits him to paste or tack a political poster showing his picture and his record on its poles. The newspaper ought to print a copy of the permit if it can find one.

A telegram was noticed passing through a relaying office addressed to Artesian Wells. We presume Mr. Wells is in the mineral water business.

This telegram from one friend to another passed over the wire recently. "Doctor says I have only three days to live. Come and help me make my last days on earth memorable."

Two instances of anglers causing line crosses were recently recorded. When they had "bites" they gave their lines such a yank that they would get entangled with the telegraph wires, causing temporary crosses which baffled linemen to find them. Telegraph companies should be compelled to move their lines further away from fishing preserves.

NEW WESTERN ELECTRIC EXECUTIVE OFFICES.—The executive departments of the Western Electric Company, Incorporated, at New York moved on June 5 from 463 West Street to new offices in the Telephone and Telegraph Building at 195 Broadway. The engineering departments will occupy the space that has been vacated at 463 West Street. The local New York distributing department and the engineering and patent departments will also remain at 463 West Street.

INSTITUTE CONVENTION.—The thirty-third annual convention of the American Institute of Electrical Engineers will be held at Cleveland, Ohio, June 27—30. There will be a banquet-reception and dance at the Hollenden Hotel, Tuesday evening, June 27.

INDUSTRIAL.

TELEPHONE CATALOGUE.—A new and unusually complete catalogue of telephone apparatus and supplies has just been issued by the Western Electric Company. It is in reality a telephone text book in that it enables the buyer of apparatus to select exactly what he needs. This is made possible by unusually complete descriptions, circuit diagrams and directions for use. The Inter-phone section of the catalogue has been similarly put together.

Handling of the Bridge Polar Duplex.

BY C. J. MCKEE, EAST LAS VEGAS, N. M.

(Continued from page 260, June 1.)

Before taking up my questions which cover the actual handling of nearly any kind of trouble liable to arise, I want to give a few suggestions—questions on subjects of vital importance in making an efficient repeaterman.

Are you a good operator; if not, systematic practice will make you one. Ask yourself whether it isn't worth while.

Do you use diplomacy in handling subscribers? This is a study in itself and a very important duty in handling duplex sets. All subscribers differ. Study their peculiar characteristics and be prepared to handle them accordingly. What ever you do, always give them the benefit of a doubt. If they claim they are not getting it, don't tell them they should be. A thousand things can happen after the stuff leaves you. Find out why it is not reaching them. One thing that they will not stand for is for you to contradict their statement when they know that you cannot look at it from their end. Subscribers are quick to form an opinion of your work. If you remedy a complaint promptly and permanently they get to rely on you, while it takes about three mis-statements for them to lose confidence in anything you say. Be sure of every stand you take. An admission on your part of an error in causing some trouble is better than leaving them in doubt. When in a hurry, a clear report to them, while taking a few words more, will save time in the long run.

Have you a pleasing personality in dealing with your fellow employes and with all with whom you come in contact? Have you noticed that this is a trait in all powerful men? Don't you overlook lots of faults in the fellow who is always pleasant and whom you like? This is a big factor in making you a better workman. It is something you can cultivate. Ask yourself.

QUESTIONS ON THE BRIDGE POLAR DUPLEX.

1. How would you tell quickly whether the distant end battery was coming in to your set?
2. How would you tell quickly whether your set was connected to a line?
3. Under what conditions would you use a peg cut-out switch and what does it do?
4. In case of full duplex operation what does the peg cut-out switch do?
5. Distant end says it sticks or is too light; what could cause this?
6. Why should the pole changing relay contacts not be close enough to arc?
7. How would you make incoming signals heavier or lighter after the distant end had given you his limit?
8. In making a resistance balance how will the needle act when you have too much or too little resistance in the artificial line?
9. How in the case of too much or too little capacity?
10. How will the milammeter act when you wire goes open?
11. How when it goes grounded?
12. How will it act when the distant end closed pole, negative or positive, goes open?
13. How if his open pole, positive or negative, goes open?
14. How would you find out that one of your own poles was open?
15. What is the normal position of the point reversing switch on the polar relay?
16. What is the normal direction of the deflection of the milammeter needle?

17. What effect is caused when your artificial line goes open?
18. How would you tell quickly whether your sending leg battery was open?
19. How in the case of your receiving leg battery?
20. Which is your sending leg battery, the one on the polar relay or on the pole changing relay?
21. In using the peg cut-out switch what effect has it on the current in your "dummy"?
22. How would the milammeter act if the wire became crossed with a foreign battery?
23. What is a good check method of determining whether incoming signals are too heavy or too light?
24. Below what amount must the current be maintained so as to protect load coils?
25. What prevents the pole changing relay from opening during the time the control relay armature is passing from one contact to the other?
26. Explain fully just what causes a slow break on a half duplex set and what is supposed to overcome the same?
27. What current should be maintained in the receiving leg?
28. What is the capacity of the different condensers in the artificial line?
29. What polarity is on your closed pole when your battery-reversing switch is to the left?
30. Which way should the switch be thrown for a composited line and what does it do?
31. In case of wire failure, where two or more half sets are connected together, which peg cut-out switch would you use?
32. What is the polarity of sending and receiving leg batteries on your even numbered sets?
33. What should the air-gap adjustment of the polar relay be?
34. If, in making a balance, you obtained one value with distant key open and another with it closed, what would you use?
35. What type duplex table in your office? Set capacity?
36. In using a duplex on a line where distant end is using a single line relay, in what position would you work your battery-reversing switch and how would you regulate the line current?
37. What is done to prevent excessive sparking at pole changing relay contacts?
38. What is done to prevent sparking when the 4 m. f. condenser discharges through the back contact of the control relay?
39. When East is sending which repeating sounder helps West to break?
40. How is the battery on your polar relay designated at the Morse board?
41. Which way will your milammeter deflect when distant end puts positive or negative battery to line?
42. What is the purpose of the 0.3 m. f. condenser connected to the front contact of the control relay?
43. Polar relay and milammeter working but control relay and sounder not, what would cause this?
44. Milammeter needle stands opposite to normal, how would you tell quickly whether wire had failed or whether you were simply getting distant end open pole?
45. After a new wire has been put in and you still get it open, what would be the first thing you would do?
46. After placing the peg in cut-out switch, what would you do?
47. If subscribers are having difficulty reading the sender, what is a good method to determine just what the sender's peculiarities are?
48. Can you always depend upon what a subscriber says?
49. After requesting the distant end to get it to you heavier and it continues to come light, what should you immediately do?
50. How can you tell a slow-acting wire by your milammeter?
51. How would the milammeter act if the wire went open at the distant end grounding switch?

(To be continued.)

COMMERCIAL TELEGRAPHERS' UNION OF AMERICA.—At the biennial meeting of the Commercial Telegraphers' Union of America, June 3, officers were elected as follows: President, S. J. Konenkamp, of Chicago; vice-president, J. F. Campbell, of Vancouver, B. C.; secretary-treasurer, Wesley Russell, of Chicago—all reelected.

PATENTS.—Important changes have been made in the United States Patent Office during the past year or so which facilitate the issue of patents and decrease the cost to inventors. Any of our clients who wish to obtain patents will consult their best interests by communicating with the Patent Department of TELEGRAPH AND TELEPHONE AGE, 253 Broadway, New York, on all subjects pertaining to patents and patent litigation.

LETTERS FROM OUR AGENTS.

NEW YORK POSTAL.

Manager J. J. Whalen has returned from his trip through the South.

A number of extra circuits to Chicago were made up and maintained incidental to the Republican and Progressive national conventions. A large volume of press matter was handled without a hitch. The Democratic national convention at St. Louis was handled in the same efficient manner.

Operator Isidore Finkelstein of this office is receiving the congratulations of the force on his recent marriage to Miss Kate Barron, of Corona, L. I. The wedding took place on Sunday, June 4, at Corona, and we have it on excellent authority that the guests present had the time of their lives. Irving C. Finkelstein (not related), also an operator in this office, acted as best man.

Two popular young women have left our service. It seems a positive hardship to be henceforth deprived of their smiling countenances, and only the thought of what the peal of not far-distant wedding bells means to them removes the sting of sorrow experienced at their abrupt departure.

Miss Alice C. Williams, an operator in this office, resigned to become the bride of A. E. W. Poinsette, of the Canadian Associated Press. Miss Williams is the daughter of all-night chief J. P. Williams.

Miss Josephine T. Schneider, a clerk in the efficiency department, left the service she has graced for over five years to prepare for her forthcoming marriage.

E. P. Tully, manager, has returned from a business trip to Philadelphia and Pittsburgh, Pa.

The office in the Lincoln Theatre Arcade, Sixty-sixth Street and Broadway, is being moved to 1906 Broadway, where a new office is being fitted up in the latest style. The new office is in the automobile district and will provide every comfort for the staff. Walter Redlefson is the manager, Joseph Detrio being in charge at night. The entire building—two story and basement—has been rented by the company.

Appointments: W. S. Green, F. P. Higgins, J. R. Meyers, R. H. Barry, A. J. Ryan, Frank Shakely, F. B. Rys, W. M. Wendover, Q. C. Trousdale, J. H.

Howard, T. A. Everett, R. O. Wager, R. H. Caldwell, R. S. Chilcotte, C. Shakely.

Resignations: F. W. Boise, A. Korn, R. A. Drake, D. V. Nelson, P. E. Mercer, B. B. Manaseri, H. L. Eiger.

Operator R. Paul has been transferred to the Cotton Exchange office. Operator H. W. Wilson, formerly of this office is now located at Newburgh, N. Y.; operator A. Rosenberg has been transferred to Mount Vernon, N. Y., and operator Dominick Suriano to New Brunswick, N. J.

NEW YORK WESTERN UNION.

Notwithstanding the fact that all records were broken in the volume of traffic handled in this office between Chicago and New York during the week of the National Republican Convention, not a single complaint was made. Those in charge of the various departments have every reason to feel proud of the achievement. Harmony and perfect organization were the contributing factors.

In the "Preparedness" parade in New York on May 13 were two full companies of women employees of the general operating department. While not officially representing the company the thirty-six women who marched were a credit to the organization. Miss Ruth Siefert and Miss Florence Gallagher were captains of the squads.

A branch office has been established at the Military Camp at Plattsburg, N. Y., which opened June 5. The office is under the immediate personal supervision of A. R. Porte, assistant superintendent, Ogdensburg, N. Y., and J. W. Gaffey, commercial agent, New York. Arrangements have also been made to establish portable offices with the troops when they are on a "hike."

Chapters of the Western Union Educational Society of New York have been organized at Washington, Boston, Philadelphia, Pittsburgh, Baltimore and Buffalo. The purposes and objects of all will be similar and a uniform educational plan will be adopted. The society is accomplishing a great deal in the development of an esprit de corps among the employees of the company in the Eastern Division.

R. H. Tucker, eastern dispatcher, has returned to duty after an absence of twelve months on account of illness, as has also W. R. Lawrence, clerk to the wire chief, who has been absent several months on sick leave.

M. E. Clark, testboard attendant, is the proud father of a daughter.

C. J. Riley, testboard attendant, and Miss Rose Sauter, were married June 11. Congratulations and the well wishes of the entire force are theirs.

A two-channel multiplex system was, on June 7, installed on the New York-Syracuse circuit. A similar equipment between New York and Kansas City is about completed. These are the first two-channel multiplexes working out of this office.

A lecture room has been established in this building for the use of the Educational Society, for conferences and for the automatic school.

A conference of chiefs and assistant chiefs and supervisors, together with all of the managers of New York City newspaper offices, was held on May

31 for the benefit of the service. Thirty-nine were present. A dinner was served.

An installation of the Kleinschmidt printer is being tried out on a Philadelphia circuit and a Potts printing system equipment is being worked between New York and Baltimore. The former machine is the invention of Mr. E. Kleinschmidt of New York and the latter of Dr. L. W. Potts of Baltimore. Both installations, which are operated mechanically and not electrically, are doing good work.

Recent visitors: J. C. Hoover, chief operator of one of the Buffalo, N. Y., branch offices; F. M. Bailey, chief operator of the St. John, N. B., office.

William J. Ackerly, aged seventy years, district commercial manager and for many years manager of the large and important branch office in the Grand Central Station, Forty-second Street, New York, died at his home in White Plains, N. Y., June 4. He was a native of New York City. Mr. Ackerly was well known to the Vanderbilts and other railroad officials, who held him in high regard.

The Traffic and Testing and Regulating Departments have been separated in the automatic department and the following appointments made: L. Smearer, assistant chief operator of the automatic department, days; J. A. Hickey, assistant chief operator of the automatic department, nights; R. F. Drehner, senior testing and regulating attendant, days, and A. H. Miller, senior testing and regulating attendant, nights.

R. F. Drehner, of the automatic department, spent a four weeks' vacation with his mother at Los Angeles, Cal., and also visited the offices at Chicago, Denver and Salt Lake City.

J. E. Palmer, a veteran telegrapher and manager of Pittsburgh, is in New York visiting his son, G. E. Palmer, chief operator of the general operating room. Mr. Palmer made his visit to this city the occasion to call on numerous old acquaintances. He has occupied prominent telegraph positions since 1868 in various sections of the country and for almost thirty-five years has represented TELEGRAPH AND TELEPHONE AGE.

J. V. Riddick of the marine department is the authorized agent and correspondent for TELEGRAPH AND TELEPHONE AGE in this office. All orders for subscriptions, electrical books or anything else that telegraph people need will have his prompt attention.

Retired New York Telegraphers.

The number of retired New York telegraphers is growing quite rapidly. It has been suggested that those who retire from active service should have an opportunity of finding permanent homes in the country within a radius of fifty miles of the city. A colony of has-been telegraphers should be organized, and we are told that it is the duty of a trade paper to see what can be done in this particular.

In the first place the people who make this inquiry are simply looking forward to the day when they will be retired. They are not on the retired list at the present time. They will no doubt likely prefer to make their own selection as to what par-

ticular spot would best suit them in their declining days. We know of one telegraph pensioner who prefers to remain very close to a row of cemeteries on Long Island. This locality would not suit other pensioners. Some of the others who have retired reside in Connecticut, some in New Jersey and others in New York and Brooklyn. We do not think it possible to persuade these people to abandon their old homes and associations to take up new ones at their time of life at remote points. Let well enough alone. Every man has a right to live according to his own ideas.

PHILADELPHIA POSTAL.

The Chicago conventions have greatly added to our already heavily increased traffic. A number of additional employes have been added to our force, among whom are: J. H. Ryan, T. J. McCormick, W. J. Burt, E. A. Gillespie, J. J. Pearce, D. L. Johnson, J. H. Crane, and H. A. Selin.

Cable repairman J. M. Eder has been busily occupied repairing submarine cables damaged apparently by steamer anchors.

J. S. Ellis and D. H. Gage, jr., of New York, were recent visitors at Philadelphia.

A big time is anticipated by the employes at Philadelphia and nearby towns at the third annual field day of the Postal Telegraph Employes' Athletic Association to be held at Woodside Park June 24. A picnic, track events and prize awarding will complete a full day's programme.

Business is very brisk in the early mornings, due to the shipment of produce. Messrs. McKeever, F. B. Miller, Baker, Salisbury and Mrs. Matthews have been assigned to early tricks.

Monitor P. J. Reilly has returned after a few weeks' illness.

Resignations: All-night chief F. P. McElroy to go elsewhere; H. V. Mattson of the *North-American*; R. Agney, manager of "Po," Wm. Sweeney of the main office; E. A. Winnemore, L. P. Cunningham, R. H. Massey and Miss Viola Hetzel.

Chief service clerk J. J. Jeffries is the proud father of a son born recently.

BOSTON WESTERN UNION.

Saturday evening, May 27, the initial meeting of the Western Union Educational Society of Boston was held in the ladies' rest room. A brief outline of the purpose of the organization was given by Chief Operator J. B. Rex at the opening and was followed by a programme of instrumental and vocal selections by talent from the local traffic forces. The entertainment occupied an hour and a half, then an intermission was taken to serve refreshments, followed by a dancing programme of ten numbers. The committees on entertainment and refreshments were employes representing the various departments, as follows: H. T. Jones, assistant chief operator, automatic department; Helen J. Murray, assistant chief operator, telephone department; Wm. J. Watterson, testboard attendant; Albert B. Kurtz, Morse operator; Marion E. Smith, statistical department; Ray H. Schwartz, multiplex operator; Margaret Sullivan, multiplex supervisor. There were 130 employes present and all had a most enjoyable time.

Harry L. Flynn is now a repeater attendant and Geo. Batho supervisor of city line, nights. L. E. Verry, supervisor, nights, relieves Mr. Young, who takes the place of "Jack" Diggins, transferred as assistant to dispatcher O. H. Chambers, days.

F. B. Townsend is adding more laurels each day to his average.

Those returning from their vacations look the picture of health, especially Messrs. Dutton and Elms, two veterans of the repeater department.

W. T. Budds has been appointed agent for TELEGRAPH AND TELEPHONE AGE and all members of the profession in Boston and vicinity are asked to direct their orders to him for subscriptions, electrical books or anything else that telegraph people require. Mr. Budds will give all such orders his prompt and personal attention.

WASHINGTON WESTERN UNION.

The Western Union traffic entertainment May 27 was a highly enjoyable affair. The programme was very select and included vocal and instrumental music, character sketches and an address by Mr. G. E. Palmer, chief operator of the New York operating department. After the programme, refreshments were served, followed by dancing. Mr. Stimpson of New York acted as master of ceremonies. Every one had a pleasant time and a flash-light picture was taken. The meeting was held in the clerks' room.

Ernest R. Edmunds, aged thirty-two years, a well-known operator, who recently worked for the United Press in Richmond, Va., committed suicide by jumping from the twelfth story of the new Munsey Building on Sunday, May 21. He is survived by his wife, who formerly worked here, her maiden name being Kittie Bell.

Wm. C. O'Neal, aged eighty-five years, an old-time operator and a members of the Society of the United States Military Telegraph Corps, died here May 18.

J. B. Austin and John Riley are on the sick list. Both of these gentlemen recently lost their wives by death.

Among recent visitors here were L. W. Wilbourn, chief operator, Baltimore; Frank R. Webb, chief operator, J. W. Collins and Mr. Austin of Philadelphia.

PITTSBURGH WESTERN UNION.

Managers appointed: J. A. Clavin at North East, Pa., vice R. H. Egan, transferred; Miss M. G. Lessig at Cresson, Pa.; Frank M. Ralston at Koppel, Pa., vice T. W. Villiers, resigned; J. W. Giles at Grove City, Pa.; Ruth G. McFarland at Sistersville, W. Va., vice J. F. Schnitzler, resigned.

M. F. Horn has resumed his duties as manager at New Kensington, Pa., after a long illness.

One hundred and thirty-nine employes of the traffic department met in the company's building, 249 Fifth Avenue, Monday evening, June 5, and organized the Western Union Educational Society of Pittsburgh. The society is organized for mutual, social and educational welfare and is to be conducted entirely by employes. The following officers were elected for the ensuing year: President, J. A.

Larimore; first vice-president, F. L. Wheeler; second vice-president, P. F. Driscoll; secretary-treasurer, J. H. Wills. An entertainment was furnished by members of the traffic force. The society is planning a series of social events for the summer, and in the fall various educational classes will be formed. Mr. L. C. Boochever of New York represented at the meeting the Western Union Educational society of New York as well as Mr. S. B. Haig, the division traffic superintendent.

CHICAGO WESTERN UNION.

James Maddox of the repeater department, this office, has been appointed commercial agent of the Chicago district.

J. S. Chynoweth and Miss Viola Sanger, both of the operating department, were married on April 22.

E. F. Sweetzer, manager at Burlington, Iowa, has been transferred to District Commercial Superintendent A. B. Cowan's office as commercial agent. H. G. Miller, formerly of Kenosha, Wis., succeeds Mr. Sweetzer as manager at Burlington. J. N. Armstrong, manager at Decatur, Ill., has also been transferred to Superintendent A. B. Cowan's office, as commercial agent, and is succeeded by G. R. Simpson of Ft. Dodge, Iowa.

INDIANAPOLIS WESTERN UNION.

G. W. Smith has been appointed manager of the Greenwood, Ind., office, vice Ralph Bidgood, promoted to manager at Greensburg, Ind.

Manager C. L. Yuille, at Kendallville, Ind., has been transferred to a similar position at Hammond, Ind., vice Mrs. E. E. Martin, resigned. He is succeeded at Kendallville by A. W. Schwartz.

A new independent office is to be established at Lisbon, Ohio, with S. S. Starks as manager. F. N. Fuller has been appointed manager at Westerville, Ohio, succeeding P. L. Van Arsdale, appointed manager at Salem, Ohio.

Thomas E. Cantwell, aged sixty-four years, an old-time operator, died here June 1. He started work with the Western Union Company fifty years ago.

Frederick Yeaton, aged sixty-eight years, formerly of the plant department, but retired on a pension three years ago, died on April 22.

SAN FRANCISCO WESTERN UNION.

Messrs. M. T. Cook, general manager; C. F. Newsom, division commercial agent; A. E. Barnes, secretary to the general manager, in company with Division Auditor Rhodes and Division Traffic Superintendent Chace have returned from the second district, where a series of commercial development meetings were held at Portland, Ore., and Seattle, Wash., which followed a very extensive meeting previously held at San Francisco at which all district commercial superintendents, together with their field men, were present. Messrs. Cook, Newsom and Barnes left San Francisco June 1 for Los Angeles, where a meeting of third district officials and managers took place on June 8.

D. F. Ingold, chief operator of the San Francisco office, has at his own request been transferred to the Los Angeles office, where he again assumes the position of chief operator. Mr. Ingold made numer-

ous friends during his three years' stay in this city, and on the eve of his departure he was given a complimentary dinner by 200 of his telegraph friends and associates.

W. L. Glasheen, chief of the automatic department, has been promoted to the chief operatorship of the general operating room. This appointment comes as a reward of his many years of study of telegraph problems. Mr. Glasheen is regarded as one of the best posted telegraph engineers in the country today.

J. D. Decatur has been appointed assistant manager at San Francisco.

A. E. Littler, formerly bookkeeper, has been appointed assistant manager to relieve Manager Thatcher of the detailed office duties and permit him to spend more time on the outside.

W. A. Daver, present transfer agent, has been appointed bookkeeper in place of Mr. Littler.

C. D. Marks will assume the duties of transfer agent in addition to those of cashier.

HELENA, MONT., WESTERN UNION.

The employees' annual picnic was held at Ten-Mile Park Sunday, June 4, forty-seven employees and their families attending. The morning was spent in various games and mountain climbing, mine exploration, trout fishing and baseball. Dinner was served for sixty, followed by a resumption of games and picture taking. After supper, the party repaired to Broadwater natatorium and enjoyed a plunge. The weather was ideal and all reported a very excellent time. Owing to illness and vacations only about half the force was able to attend.

Late arrivals: D. C. Walters, Pittsburgh, Pa.; I. R. Wallace, Miles City, Mont.; W. H. Frohoff, St. Louis, Mo.

The elegant furnishings of the Helena office have awakened a noticeable pride among the operators many of whom have lately purchased nickel-plated sending machines, discarding their old ones. Nothing is too good for the Helena boys.

SALT LAKE CITY WESTERN UNION.

A. Tolle, formerly manager at Wallace, Idaho, and more recently in the traffic department, Kansas City, Mo., has accepted the managership at Billings, Mont., succeeding H. H. Hardy, who goes to Oklahoma.

G. A. Naylor, stenographer in the office of Manager Knight, Salt Lake City, has been promoted to be assistant manager at Butte, Mont. Mr. Naylor is succeeded at Salt Lake City by Mrs. J. H. Hunt.

ST. LOUIS WESTERN UNION.

Charles E. Dubbs, manager Commercial News Department, has been promoted to commercial

agent; Don R. Godkin has been appointed commercial agent, Kansas City, Mo., and Geo. P. Brinkley, formerly employed in the traffic department, has been made assistant manager at Kansas City, vice Wm. T. Brown, promoted to district commercial agent, with headquarters at St. Louis.

LOUISVILLE, KY., WESTERN UNION.

Patrick F. McCarthy, aged fifty-nine years, all-night chief operator of this office since 1885, died May 19, after a brief illness. Mr. McCarthy was born in Ireland and went to Sandusky, Ohio, with his parents when a child. He was operator at Put-in-Bay, Ohio, when the first cable was laid to that island in 1872.

MEMPHIS WESTERN UNION.

Manager C. H. Carroll, with his corps of branch managers, operators and messengers, showed their patriotism by joining, with twenty thousand other citizens, in the "Preparedness Parade" held here Saturday, June 3.

CINCINNATI WESTERN UNION.

Superintendent A. A. Montgomery presided at educational meetings of managers and other officials recently held at Cincinnati, Columbus, Cleveland and Toledo.

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No operator who has had to use a hard key knob continuously should fail to possess one of these flexible rubber key caps, which fits snugly over the hard rubber key knob, forming an air cushion. They render the touch smooth and the manipulation of the key much easier. Price, fifteen cents. J. B. Taltavall, TELEGRAPH AND TELEPHONE AGE, 253 Broadway, New York.

ASSOCIATIONS AND ORGANIZATIONS.

The Old Time Telegraphers and Historical Association, Andrew Carnegie, president; F. J. Scherrer, secretary, 30 Church St., New York. All Old Time Telegraphers who are eligible for membership are requested to send for application blanks. The next reunion will take place in New York City, September 26, 27 and 28.

Association of Railway Telegraph Superintendents, E. C. Keenan, president; P. W. Drew, 112 West Adams Street, Chicago, secretary and treasurer. Annual meeting St. Paul, Minn., June 20.

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Post office or express money orders, checks or drafts may be made payable to Telegraph and Telephone Age when ordering goods advertised in the classified columns. They will be endorsed and turned over to the proper party when the goods have been shipped to those ordering.

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FOR SALE—Yetman Keyboard Transmitter without typewriter attachment; new cost \$35.00. Will sell for \$10.00. Address Keyboard, c/o Telegraph and Telephone Age, 253 Broadway, New York.

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For Sale—Two Resistance Detectors, manufactured by J. C. Henry, Denver, Colo., reading 5/10-0-5/10; price \$10 each, good as new, cost \$25. Address Detector, c/o Telegraph and Telephone Age, 253 Broadway, New York.

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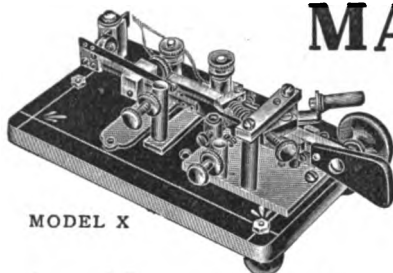
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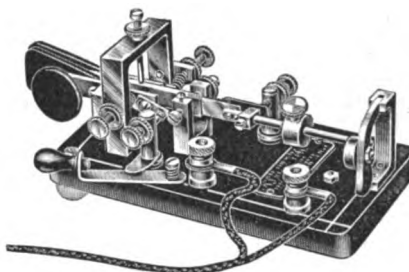
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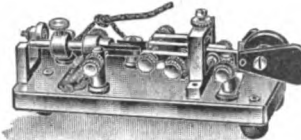
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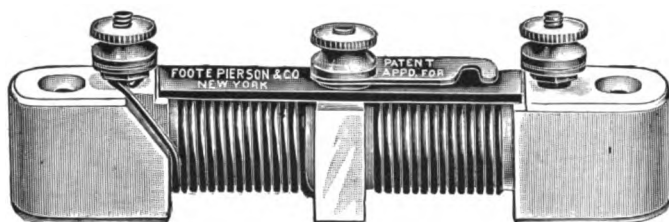
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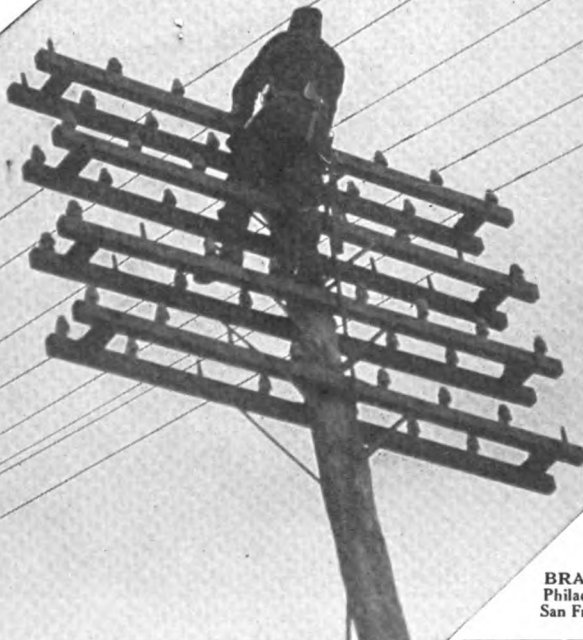
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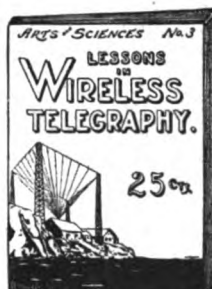
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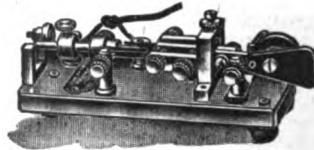
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Telegraph and Telephone Age

No. 13.

NEW YORK, JULY 1, 1916.

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BACK NUMBERS of this journal three or more months old will be charged for at the rate of 25 cents per copy. Issues over one year old, 50 cents for one copy, but where two or more copies are purchased, the price will be 25 cents per copy.

NEW YORK, JULY 1, 1916.

CONTENTS.

Operators in the Military Service. The St. Paul Convention.	299
Telegraph and Telephone Patents. Stock Quotations. Personal.	300
Postal Executive Office Notes. Western Union Executive Office Notes. The Cable. Galetti Wireless to be Developed.	301
Canadian Notes. The Telephone, Radio Telegraphy. The Chicago and St. Louis Conventions.	302
Combined Telegraph and Telephone Operation, By J. F. Skirow.	303
The Speedwell Iron Works, Famous in Telegraph History.	304
Line Repairing in the Sierras in Winter.	305
Return Wiring System. Oddities of the Telegraph.	306
The Messenger Boy.	307
Some Telegraph Reminiscences, By J. L. Edwards.	308
Marriage by Telephone. Answers to Questions.	310
Convention of Association of Railway Telegraph Superintendents.	313
The Railroad. Railway Telegraph and Telephone Statistics.	323
Convention of Train Dispatchers. Obituary. Death of Prof. S. P. Thompson. Death of S. S. Garwood.	324
Efficiency Engineering in the Telegraph Service. The Associated Press.	325
Handling of the Bridge Polar Duplex (Continued), By C. J. McKee.	326
Railway Telegraph and Telephone Appliance Association. Telegraph and Telephone Development in Alaska. Letters from our Agents.	327

Operators in Military Service.

Many telegraph operators throughout the country who were members of the national guards and other military organizations have been ordered to report to their regiments, thus depriving the telegraph and telephone companies of their services. There has been a shortage of good telegraph operators for many months past and the movement of troops to the Mexican border will probably greatly aggravate the situation. The Postal

Telegraph-Cable Company does not encourage the enlistment of its employes on the ground that in time of war operators are needed far more as telegraph operators than as soldiers or officers.

At the beginning of the Civil War in 1861 there was a rush of telegraphers into the military service, with the result that the government itself had to issue instructions to accept no more telegraphers and to scour the regiments for those who could manipulate the telegraph key. Wherever operators were found carrying a gun they were immediately transferred to the military branch of the telegraph service where their usefulness was more urgently needed.

Several hundred operators, employes of the Western Union Telegraph Company, the Postal Telegraph-Cable Company, the American Telephone and Telegraph Company and innumerable private concerns, have joined the colors. Just how many telegraphers are engaged in the military service has not been definitely ascertained. The returns so far received, however, indicate that the number is so great that the departure of these men from the wire will be keenly felt by telegraph interests throughout the country if their absence continues for any length of time.

The Western Union Company will allow half pay to its operators who are members of military organizations and the Bell Telephone System will allow full pay for three months and full pay, less the amount paid by the government, for nine months thereafter. The Western Electric Company will also pay in the same manner.

The St. Paul Convention.

The St. Paul convention of the Association of Railway Telegraph Superintendents, June 20—23, was one of the best ever held by that organization. The attendance was unusually large and the quality of the papers presented was of high degree, and, together with the entertainment features, the meeting was a happy combination of business and pleasure.

The papers were all of the most practical kind and the discussions which ensued added very materially to the subjects under discussion.

One of the most interesting of the papers read was that on wireless telegraph and telephone development. In itself the paper was very conservative, but in the discussion claims for a condition well nigh perfection in wireless were presented. Against these was the statement made in a letter from Mr. J. J. Carty, who was very careful indeed in the expressions of opinion as to the future of wireless. He acknowledged its value for service between ship and shore and between ship and ship but distinctly recognizes its limitations, and there was little immediate hope proffered to those who would have wireless for railroad work as perfect as they would

like it to be. According to some of the statements made the question of wireless on railroads is not so much one of physical perfection as it is of willingness to pay the price. However, the subject of wireless telegraphy in railroad work is one of deep interest, and the convention gave as much time to its consideration as to any other.

Among the other papers of a general character were those on electrolysis and protection against lightning and high tension currents.

A diversion from the regular proceedings was the "attempted" resignation of the secretary after a continuous service of thirty-three years in that position. He probably thought it was going to be an easy matter to resign and obtain the rest from the cares of office which he is entitled to, but his eyes were opened on that point. Mr. Drew has held the position of secretary-treasurer of the association for so long that one could not think of the position without thinking of the man. A sort of compromise was made, however, Mr. Drew agreeing to remain in harness until his successor, to be appointed by the president, becomes able to take up the duties of the position and continue the work without any jar from the change.

In our present issue will be found abstracts of some of the papers, and in other succeeding issues abstracts of other papers will appear.

Telegraph and Telephone Patents.

ISSUED JUNE 6.

1,185,635. Automatic Telephone Exchange System. To G. Deakin, San Francisco, Cal.

1,185,711. Receiver for Wireless Telegraphy and Telephony. To G. W. Pickard, Amesbury, Mass.

1,185,878. Telephone Amplifier. To J. J. Comer, Chicago, Ill.

1,185,879. Telephone System. To J. J. Comer, Chicago, Ill.

1,185,938. Telephone Exchange. To C. L. Redfield, Chicago, Ill.

1,186,049. Lock for Telephones. To J. S. Stephens, Paterson, N. J.

1,186,051. Machine Telephone Switching System. To J. N. Wallace, Antwerp, Belgium.

1,186,083 and 1,186,084. Primary Battery. To E. M. Deems, East Orange, N. J.

1,186,305. Telephone System. To E. A. Graham, W. J. Rickets and E. A. Sanftleben, Brockley, London, England.

1,186,450. Apparatus for Phonographic Recording Telephonically Transmitted Conversations. To H. Starke, Cologne, Germany.

1,186,455. Radiotelephony, Radiotelegraphy, and the Like. To W. Torikata, E. Yokoyama and M. Kitamura, of Akita, Sakai and Masajiro, respectively, Japan.

1,186,462. Measured Service Telephone System. To B. D. Willis, Chicago, Ill.

1,186,464. Telephone Exchange System. To G. Babcock, Rochester, N. Y.

1,186,484. Pay Station Telephone System. To F. Lubberger, Chicago, Ill.

Stock Quotations.

Following are the New York closing quotations of telegraph and telephone stocks on June 27:

American Telephone and Telegraph Co.	130
Mackay Companies	82 — 82½
Mackay Companies, preferred	67¾ — 68
Marconi Wireless Tel. Co. of Am. (Par value, \$5.00)	3¼
Western Union	93½

[This publication is prepared to purchase for its friends one or more shares of Western Union, Mackay, Marconi or any other stocks, either outright or on the installment plan. A remittance of \$10.00 per share should be made as the minimum payment if purchase is to be made on the installment plan. The stock will then be purchased at the market price and the balance due on the stock can be paid off at the rate of \$5.00 per month or in any other sum to suit the convenience of purchaser. In the meantime 6 per cent interest will be charged for the balance due on the stock. The purchaser, however, will have the benefit of the dividends, which, in many cases, will more than pay the interest charges. As soon as the stock is paid for, it will be registered in the purchaser's name and delivered to him. The commission charge on the purchase of stock is \$1.00 on transactions covering from one to eight shares. For eight or more shares the commission charge is 12½ cents per share. In remitting to cover purchases of stock, name the price at which purchases are to be made.]

PERSONAL.

MR. FRANK J. RODGERS, inspector of construction of the State Highway Department in Sullivan County, N. Y., has been appointed private telegrapher for Mr. J. D. Rockefeller at Pocantico Hills, N. Y.

MR. CHAS. A. TINKER, formerly general superintendent of the Eastern Division, Western Union Telegraph Company, New York, who retired from active service fourteen years ago, has gone to Winnipeg, Man., where he will reside with his daughter and son-in-law until October, when he will return to New York.

MAJOR-GENERAL JOHN F. O'RYAN, of the New York National Guard Division, which is mobilizing at Peekskill, N. Y., began his career as an office boy for the Western Union Telegraph Company. The camp facilities include a telegraph office, public telephone stations, a postoffice and various other necessary conveniences.

MR. E. B. MCNAIRN, a well-known old-timer and United States Military Telegrapher during the Civil War, who has for many years past resided at Mendocino, Cal., has been compelled to remove to Gilroy, Santa Clara County. Mr. McNairn found it necessary to get away from the fogs and cold winds of the coast towns, which were impairing his health. He has an excellent and interesting Civil War record.

POSTAL TELEGRAPH-CABLE CO.**EXECUTIVE OFFICES.**

MR. C. H. MACKAY has been made Knight Commander of the Equestrian Order of St. Gregory the Great by Pope Benedict.

MR. C. C. ADAMS, vice-president of this company, was elected for the fourth term president of the village of Lawrence, N. Y., without opposition.

MR. J. J. LYNCH, superintendent of construction with headquarters at San Francisco, is in Oregon on extensive reconstruction work.

MR. H. R. WATERBURY, of the tax department, New York, has returned to his office after substituting as manager of the Bridgeport, Conn., office for a short period.

WESTERN UNION TELEGRAPH CO.**EXECUTIVE OFFICES.**

MR. J. C. WILLEVER, vice-president in charge of commercial, and Mr. A. G. Saylor, general manager of the Eastern Division, New York, have returned after an extended trip of inspection through the New England states in the interests of the service.

MR. E. Y. GALLAHER, vice-president and controller, has returned from a business trip which took him to Atlanta, Ga., Dallas, Tex., Denver, Col., and Chicago.

MR. J. R. TERHUNE, district commercial superintendent at Nashville, Tenn., has been promoted to the position of division commercial agent, with headquarters at the same place.

MR. J. B. CHEATHAM was recently appointed district commercial superintendent at Nashville, Tenn. He is thirty-six years of age. Mr. Cheatham has held positions as district manager, commercial agent and superintendent in the Southern Division.

MR. JOHN MCROBIE, one of the brilliant telegraphers of his day, for the past few years general manager of the American District Telegraph Company of New Jersey in New York and later identified with the Cincinnati office of the Western Union Telegraph Company, at his own request has been retired and has located on Newell Farm, Hartland, Wis. Mr. McRobie was at one time manager of the San Francisco office and was prominent in telegraph circles in Chicago for many years as an expert operator and an official.

DIVIDEND.—The regular quarterly dividend of $1\frac{1}{4}$ per cent. was declared June 13.

THE CABLE.

MR. GEORGE G. WARD, vice-president and general manager of the Commercial Cable Company, New York, recently visited the company's equipment at Boston and the cable station at Rockport, Mass.

MR. C. V. AUGER, of the Western Union Cable System at Liverpool, Eng., has been promoted to be district manager at London.

MR. J. HAMILTON has been appointed district manager of the Western Union Cable System at Liverpool, Eng., vice Mr. C. V. Auger, transferred to London.

MR. J. W. LAWSON, superintendent of the Commercial Cable Company of Cuba, Havana, Cuba, is in New York for a few weeks recuperating.

MR. MAYNARD DODD, chief electrician, Commercial Pacific Cable Company, with headquarters at Honolulu, is in New York on business connected with the service. Mr. Dodd spends a good portion of his time at the company's headquarters at Seattle, Wash.

MR. D. BUDGE, general station superintendent of the Bermuda and Direct West India Cable Company, with headquarters at Halifax, N. S., was in New York a few days ago on his way from Bermuda to Halifax. He was accompanied by his wife. Mr. Budge has been in ill health for some time and was in Bermuda for several months for the benefit of his health. On June 1 he retired from active service. The duties of Mr. Budge are at present discharged by Mr. A. H. Bannerman of Halifax.

MR. AND MRS. J. D. GAINES of Shanghai, China, are in New York. Mr. Gaines is superintendent of the Commercial Pacific Cable Company at that place and is on a six months' vacation, after a five years' residence in the far east.

MR. JOHN FOTHERGILL, aged forty-seven years, an operator in the employ of the Commercial Pacific Cable Company since 1906, died at Honolulu on June 2, after an operation for appendicitis. He was held in high esteem by all his colleagues.

THE REVEREND B. C. L. JENKINS, bank messenger for the French Cable Company at New York for the past thirty-four years, died June 5. Mr. Jenkins was superintendent of the Abyssinian Baptist Sunday School in New York for twenty years.

Galetti Wireless to be Developed.

The Indo-European Telegraph Company, Ltd., London, England, states that owing to the continued interruption of the company's route during the whole of 1915, the actual receipts were confined to local traffic. It has been impossible to make final arrangements for the reestablishment of the route. Under the existing arrangements with other companies and administrations the company's receipts have not been prejudicially affected, but the directors foresee a diminution in the receipts for 1916.

On this account the company thinks it advisable to develop the Galetti wireless patents and to this end has entered into a new combination of interests with the firm of Creed, Bille and Company, Ltd., of London for the development of the wireless side of the business, for which purpose the Creed Company will be enlarged. It is the intention of the Indo-European Telegraph Company to utilize the wireless art in connection with its cable and land line system to span the gaps so long interrupted through the countries at war.

Cable Interruptions.

Interruptions to submarine telegraph cables are reported to June 27 as follows:

Azores and Emden (two cables), August 5; Shanghai and Tsingtau, and Tsingtau and Cheefoo,

August 24; Sweden and Germany, September 30; Almeria and Melilla, October 1; Penogomera and Alhucempas (defective cable), October 1; Yap and Menado (offices closed) October 7; Obock and Djibouti, November 6; Constantinople and Tenedos, November 6, 1914.

CANADIAN NOTES.

CHARLES A. POPE, son of Mr. Edwin Pope, superintendent of government telegraphs, was killed in the trenches recently. He was in the law business in Montreal.

G. H. PERRY, second son of Mr. G. D. Perry, general manager of the Great North Western Telegraph Company, Toronto, Ont., has gone to the war zone with the army service corps. Two half brothers of Mr. G. D. Perry are at the front, one of them having been wounded recently.

MR. M. B. DOUGLAS, manager of the St. Catharines office of the Great North Western Telegraph Company, has been transferred to North Bay, and is succeeded at St. Catharines by Mr. John Frazell.

MR. THOMAS P. FREELAND, who has just been promoted to be chief clerk to the superintendent of the car service department of the Canadian Pacific Railway Company at Calgary, Alb., is the son of Mr. J. W. Freeland, of Marion, Ohio, a well known old-time and Civil War military telegrapher. Mr. T. P. Freeland is a telegrapher and went to Canada from Marion about two years ago. Mrs. J. W. Freeland, his mother, is a well known authoress.

WILLIAM H. COCHRANE, aged forty-seven years, an operator in the employ of the Great North Western Telegraph Company at Montreal, Que., died June 12.

CANADIAN PACIFIC APPOINTMENT.—Mr. E. W. Clayton, agent at Nelson, B. C., has been promoted to be agent at Victoria, B. C.

THE TELEPHONE.

MR. H. S. BROOKS, general commercial superintendent, American Telephone and Telegraph Company, New York, is absent on his vacation. He does not expect to return to his office until the middle of July.

MR. F. R. VERIAN, of the dispatcher's office of the Erie Railroad Company, Jersey City, N. J., and Mr. J. Caffrey of the same office have accepted positions with the American Telephone and Telegraph Company at 24 Walker Street, to fill vacancies caused by resignations.

MESSRS. E. B. HAGERTY, Frank Tiernan and Cornelius Forsythe, of the American Telephone and Telegraph Company, 24 Walker Street, have joined their regiments for service on the Mexican Border.

MR. FRANK P. McELROY, all night chief, Postal Telegraph-Cable Company, Philadelphia, has accepted a position with the American Telephone and Telegraph Company at the same place.

MR. E. J. HEID of the Postal Telegraph-Cable Company, Indianapolis, Ind., has accepted a position with the American Telephone and Telegraph Company with headquarters in the same city.

Transcontinental Demonstration at Plattsburg.

At a demonstration of the transcontinental telephone talk, which took place at Plattsburg, N. Y., on June 9 during a banquet given by the Chamber of Commerce of that city, Mr. W. B. Eddy, an old-time telegrapher but identified with telephone interests for over thirty years, in an address to the audience stated that he was the first man to hold long distance telephone communication between Whitehall and Plattsburgh. That was also over thirty years ago. The man at the Plattsburgh end of the wire was Warren Dow, then manager of the telegraph office there. Bugle calls from the Plattsburgh Barracks made on that occasion were distinctly heard at the Whitehall end of the circuit.

RADIO TELEGRAPHY.

MR. WILLIAM MARCONI announces that in the near future he will introduce a new, independent and very simple apparatus to be worked from the bridge of a ship which would put an end to all danger of collision in darkness or fog.

THE SUPERINTENDENT OF NAVAL RADIO SERVICE, Capt. W. H. G. Bullard, announces that effective on and after July 1, it will be obligatory on the part of senders of radiograms to be handled by the Naval Radio Service to indicate in address of the message the class of vessel it is desired to reach by this service, such as S. S. (steamship or steamer), or U. S. S. (United States ship) as the case may be. This order becomes necessary owing to the confusion in proper handling of such traffic because of a large number of names of ships being the same as cities, towns, etc. The extra word will be charged for and counted in the check.

The Chicago and St. Louis Conventions.

There was never before such a record of telegraph wire activity as has centred in Chicago and St. Louis for the Republican, Progressive and Democratic National Conventions. More than 600,000 words left Chicago in a single day. This was about 200,000 fewer than were wired on the day Colonel Roosevelt arrived in Chicago in 1912, but the week's total far exceeded that of four years ago.

While in some respects the Republican-Progressive double show of this year did not come up to expectations, it gave the telegraph people quite as much of a rush as they had anticipated. The reason was that an unusual number of newspapers in small cities and towns sent special correspondents to Chicago.

It required over 200 operators on the convention floor set apart for the telegraph companies to handle the enormous amount of traffic.

Combined Telegraph and Telephone Operation.*

BY JOHN F. SKIRROW, ASSOCIATE ELECTRICAL ENGINEER, POSTAL TELEGRAPH-CABLE COMPANY, NEW YORK.

Telegraph signals, as compared with telephone signals, are of much greater magnitude. If we should make a picture representing a telegraph signal and a telephone signal one would resemble a hill and the other a pebble. A representation of a series of telegraph signals would therefore look like a series of large waves, and a representation

alternating and of relatively very high frequency; that is, the direction of the current changes very rapidly, varying between sixty and 2,000 alternations per second. The current on a telegraph circuit may be either direct or alternating, but the alternations with hand transmission of Morse signals will seldom reach or exceed twenty-five per second.

When alternating currents are sent through an insulated wire wound round a large core of soft iron, these currents tend to change the polarity

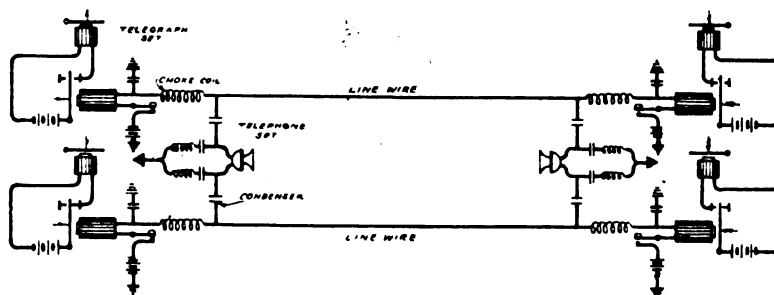


FIG. 1—COMPOSITE TELEPHONE AND TELEGRAPH CIRCUIT.

of a series of telephone signals would look like a series of ripples. Let us now imagine a series of waves and a series of ripples on the waves; you may have noticed this effect upon a body of water—heavy or long waves, with a wind ripple blowing over their surface. This analogy indicates the manner of combining telegraph and telephone signals.

The picture of the rise and fall of current in a telegraph signal resembles a wave. In a normal telegraph signal the picture of the wave shows an abrupt rise, a more or less sustained period of maximum strength and an abrupt fall back to the zero line. Such a wave would have what might be termed sharp corners and a ripple upon such a

of the iron. It takes an appreciable period of time, however, to change the magnetic polarity in a mass of iron, and the length of this period increases with the size of the mass of iron. As a result an alternating current of high frequency passing around a large iron core does not appreciably affect the core magnetically, but the action of this current upon the iron sets up a reactance which has the effect of choking the alternating current back, and thus preventing its passage through the coil surrounding the iron core. A coil constructed as indicated is known as a choke coil, or impedance coil, and such a coil forms a very effective barrier to the passage of high-frequency alternating currents. With low-frequency alternating currents, on the other hand,

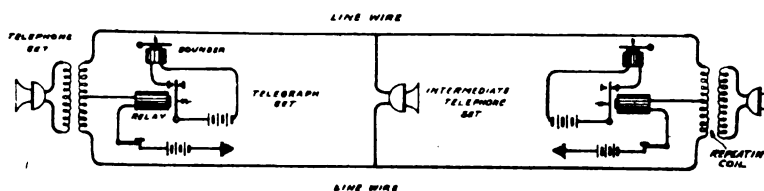


FIG. 2—SIMPLEX CIRCUIT.

wave would be disturbed at these corners. In order to make waves that ripples may pass over without being disturbed the corners of the waves must be flattened or rounded. In combined telegraph and telephone signaling it is necessary to so modify the telegraph waves, *i. e.*, reduce the sharpness of their corners, because if this is not done the telegraph signals will be heard in the telephone receivers. On the other hand, if the telegraph waves are flattened too much the telegraph signals will be sluggish.

The currents transmitted by a telephone are al-

ternating and of relatively very high frequency; that is, the direction of the current changes very rapidly, varying between sixty and 2,000 alternations per second. The current on a telegraph circuit may be either direct or alternating, but the alternations with hand transmission of Morse signals will seldom reach or exceed twenty-five per second.

When alternating currents are sent through an insulated wire wound round a large core of soft iron, these currents tend to change the polarity

*From *Postal Telegraph*.

is inserted to prevent the alternating currents finding a short circuit through the telegraph apparatus and ground, thus short circuiting the telephones. A study of the diagram will make it clear that the only path for the telephone currents is between the two lines and telephones via the condensers.

Telegraph apparatus is connected in the usual manner to each line back of the choke coils, and condensers are also connected to ground between the telegraph apparatus and the choke coils. The effect of these condensers and the choke coils upon the telegraph current is to smooth out the telegraph waves. The extra condensers and choke coils around the telephones are to provide a by-path so that differences of pressure upon one telegraph circuit and the other will not result in a flow of current through the telephones and thus cause noise.

In a composite circuit two telegraph circuits and one telephone circuit are obtained; but it is necessary to limit the voltages upon the telegraph circuits to prevent the telegraph signals being heard in the telephone receivers. To revert to the simile previously employed, if the waves are too high they will cause noise in the telephones even if the corners of the waves are rounded off. Very few intermediate telephone stations can be placed upon composite circuits without impairing the telegraph efficiency, and it is necessary to use a special form of signaling upon such circuits because hand-operated bells make signals that would interfere with the telegraph signals.

In a simplex circuit (Fig. 2) two wires are used to provide one telegraph and one telephone circuit. In one form of simplex a choke coil is used to prevent the telephone signals from being short circuited in much the same manner as in composite operation, but the usual form of simplex circuit employs a repeating coil, which consists of two windings upon the same core. The telephone signals are repeated through this coil and pass over the loop formed by the two line wires. The telegraph set is connected to an intermediate point in the secondary winding of the repeating coil, and the telegraph current therefore divides and flows over the two line wires. Any number of intermediate telephone sets may be bridged across the two line wires without the use of condensers, and hand ringing may be used on a circuit of this kind without disturbing the telegraph signals. As a simplex circuit provides two line wires for the telegraph circuit in place of one wire, such a circuit has but one-half the resistance of that of a single wire of the same size. This materially helps the telegraph operation upon such a circuit. A simplex circuit is not subject to voltage limitations on the telegraph side, because the telegraph current cannot directly enter the telephone apparatus. It is therefore possible to operate high-pressure duplexes or quadruplexes upon simplexes without interference to the telephone circuits upon them.

ALUMINUM.—Weight for weight aluminum is a better conductor than silver, and nearly twice as good as copper.

The Speedwell Iron Works, Famous In Telegraph History.

Through the recent death of Mrs. John H. Lidgerwood, the old homestead of Stephen Vail, who made the Speedwell Iron Works famous, and the building in which Alfred Vail and Samuel F. B. Morse perfected the electric telegraph, and from which the first message was sent, has passed into possession of the children of Alfred Vail, who was a son of Stephen Vail.

Included in the homestead is about eighty acres of land, a lake near the Lackawanna Railroad and a factory building with a water wheel to provide power, in which Morse and Alfred Vail perfected the telegraph.

At the death of Mrs. Lidgerwood it was provided that Stephen Vail, Jr., a son of Alfred Vail, should have possession. He died several years ago, and by the succession stated in the will James Cummings Vail, of Morristown, N. J., another son of Alfred Vail, succeeds to the homestead and the possession of the telegraph building for his lifetime. We understand that Mr. J. C. Vail does not wish to disturb the present occupants.

At his death the succession passes to George Vail, another son of Alfred Vail, who resides in New York. After his death the executors are to hold the property for twenty-one years and then deed it in fee equal shares to the heirs of Alfred Vail then living.

Mr. J. C. Vail writes as follows in regard to the Speedwell works:

"The first telegraph message, of which there is any record, was made in the New York University building on Washington Square, September 4, 1837; the one, at Speedwell, N. J., on January 11, 1838, both in signs for numbers. The first in alphabetical signs, was made on January 24, 1838, in New York. The machine produced at Speedwell had a horizontal lever with an up and down motion to the pencil, and was gradually developed into the machine used in May, 1844, to send the historic message 'What hath God wrought.'"

"The 1837 caveat, with papers attached (last October), the Smithsonian telegraphic exhibit as arranged, and the last published life of Morse, all have a tendency to eliminate from the public mind the existence of these 'signs for numbers,' as used before 1838.

"The old factory, purchased by Stephen Vail, Sr., in 1807, at Speedwell, is as it was in 1837, the only edifice, now existing, of all those known to be historic telegraphically, and such being the case, is it not worth while for the telegraph societies to make an effort to preserve it for futurity?"

How To Keep Healthy.

The Chicago department of health recommends the following rules for the preservation of health: Breathe deeply. Eat temperately. Chew thoroughly. Drink water copiously. Clean teeth carefully. Bathe frequently. Eliminate freely. Laugh heartily. Sleep regularly. Work playfully. Exercise daily. Serve willingly. Speak kindly. Play some. Read much. Think more.

Line Repairing in the Sierras in Winter.

When some winter morning the rain clouds part and show for a moment the Cascades shining white in newfallen snow, writes John Bechbalt, in an exchange, be reasonably sure that up along these wind-harassed summits, following the lonely trails, defying the menace of the gale and the avalanches, are the bent figures of men on snowshoes, patrolling the wires that chatter incessantly with the gossip of the world these workers serve but seldom see.

At Seattle and Spokane the wire chiefs stand at the switchboards, watching the working conditions of every wire. Fifty miles away a storm swoops down on Snoqualmie Pass. In the Pass the world is suddenly blotted out by the white hand of the gale. The stinging snow flies and the wind screeches. And now and again the shrill key of the wind is blotted out by the roar that rocks the mountains as an avalanche sweeps over the cliffs. Trees fall and wires and poles go down.

At his switchboard the wire chief suddenly loses Spokane. He connects up his Wheatstone bridge. The bridge tells him how many miles away that break is. Strung along the line through the mountains are the trouble hunters. They are quartered at ranches and emergency cabins, about six miles apart. The wire chief takes the key and summons the lineman just west of the break. A muffled figure on snowshoes, weighted down with thirty pounds of climbing irons and tools, pushes out into the storm.

An hour later, perhaps a day later, this same lineman climbs some pole that leans into the abyss. The wind lashes him with a thousand stinging whips. It pounces upon him like a beast of prey and seeks to shake him to destruction. The lineman "cuts in" his little pocket telegraph and, bent low against the shrieking wind, calls his chief.

"Chief? This is Smith from Heldridges. Wire O. K. here. Anything more? Huh? Yes, pretty nasty here. Been a mountain lion following me through the brush all morning. It's so close now I can smell its pesky wet hide. Guess he's waiting down at the foot of the pole for his breakfast. Shoot it? So I would if the cuss would come out into the open and fight."

Then the lineman splices his wire, descends the pole and plods on to some fresh break the "bridge" has located, or, if he is very lucky, back home to dry out and warm up, ready for the next call. To the lineman it has ceased to be a miracle that a man in the perils of the wilderness may cling buffeted to a pole and chat with men sitting warm and safe 100 miles or more away, taking his instructions as the problems arise, getting word to cheer his lonely trail. Perhaps the most unusual incident of this sort occurred a few years ago to a Bell telephone lineman in the Cascades. Connecting a break in the line, he was working just beneath a trembling avalanche. Without warning the snow slid upon it. It might have been his own voice or the shrillness of his whistle that disturbed the mountain's

equilibrium, or perhaps nothing greater than the snapping of a twig.

Whatever it was caused the slide, in a second's time the lineman was buried. When he dug his way out of the drifts, fortunately alive, though injured, he saw at a glance that his trail to safety had been swept away. So delicately was the snow poised over an abyss that he dared not cross it. But by some miracle the line remained unbroken and a few feet of the pole yet protruded from the drifts.

The lineman did the only thing possible—climbed the pole and cut in his portable telephone. He reported his plight and settled down to wait for help. Throughout the long day, while the storm raged about him, he talked to the operators in the towns. It needed all a man's courage and endurance to cling to that pole and wait, wait, wait. Few men could have done it and fewer still could have done it without the stimulus of the friendly voices that came to him across the wires.

Rescue did arrive at last. The rescue party paused at the edge of the avalanche. They saw they could not cross on foot. There was a consultation. Finally they rigged up a bos'n's chair, the little portable seat which linemen often hook across the wires and slide along on as they work between poles. In this rig hung to the wires a volunteer ventured out across the avalanche. He brought back his companion, half dead from exposure.

Nor is it always the men who suffer. Sometimes mountain linemen are married. There is the story of Mrs. N. B. Mayo of Laconia, a good example of what the women have to endure. The Postal Telegraph-Cable Company has line patrolmen all along its right-of-way through the Cascades. One of the stations is at Laconia, at the summit of Snoqualmie Pass. The winter of 1912 will long be remembered by mountain railroad men and mountain linemen. It brought snows that tied up traffic of all sorts. Trains were stalled everywhere by the big drifts. Rotaries got lost and buried by the slides. One freight train was lifted bodily off its shelf on the mountain side and thrown into the bed of the Snoqualmie river at the foot of the cliff by a snowslide.

Lineman Mayo went out into one of the worst storms of that January. Wires to the east of his station had gone down and it was his job to get them up. When he left the storm was at its height, but it was his job to keep that line open. A railway man and a line patrolman are alike in one thing. In times of stress they have an obsession stronger even than religion; come what may, the line must be kept open. When the last trump sounds and the leaves roll up like a scroll that time of world-wide dissolution will find all the living railroaders and linemen on the job doing their mightiest to keep the line open.

So Mayo, who is a husky young mountaineer, kissed his wife and three babies good-bye and, strapping on his snowshoes, stepped outside the door of his little cabin at Laconia. When he had

shuffled ten feet from the door he was lost to the sight of those anxious watchers in the tiny home. More than a week passed before they saw him again. The wife turned back to her housekeeping and the care of the babies. And the snow fell. The day passed and the night passed, and the snow fell, but the hours brought no word from Mayo. The drifts rose above the windows of the little house at Laconia. No longer could the doors be opened.

Another night and another day and the snow falling steadily. The railway was tied up and the rotary crew worked all hours. There was no idle man nor woman to dig paths for Mrs. Mayo or even to see how she fared. Now the snow was above the eaves of the little house. It was quite dark inside and the wood was running out. The wood pile was ten feet from the back door, but it might as well have been ten miles. Worse still, the snow had pushed open both doors and the woman could not close them.

A week after Mayo left, J. L. Coyle, district foreman for the Postal Telegraph-Cable Company, got to Laconia. He knew the general direction in which the little company-house was located. Looking across a plain of white he saw a tiny black speck, the gable end of a roof. A little curl of blue smoke marked the spot. It was there the lineman's wife was waiting word from her husband. When Superintendent Coyle arrived at the home and dug his way in, he found the last of the fuel had been put into the stove. He brought the first word that Mayo was safe, but stormbound, at the next station east of Laconia. He had been there a week, called to safety by orders of the wire chief. That was one time that the line stayed down awhile and at least one woman won't forget it for a long time.

Four years ago Lineman G. W. Hull was stationed at Wolf's cabin, on Lake Keechelus. Somewhere to the east the wires went down. The snow was deep and still falling. Hull got instructions to locate the break. He got Wolf to accompany him. The two started east on snowshoes.

The wire chief, watching his board at Seattle, noted a second break in the line not long after the men left Keechelus. The bridge showed the new break to be behind the men. They were cut off from communication east or west, somewhere out in the storm. The wire chief waited twenty hours to hear from Hull or Wolf, but no word came. Then he started rescue parties from the east and the west side of the range.

Ben Hunegardt was the lineman at Easton. He was sent west with a helper. At noon the helper turned back. "You may be a — fool, but I'm not going to have my friends standing around and saying, 'Don't he look natural,' after they find my body," he declared. "All right, Bill, good-bye," said Hunegardt briefly. He set his face to the storm and shuffled on. Night came and the storm closed in about him. He stumbled forward.

It was past midnight when Hunegardt made out a dark shape in the snow. It proved to be a portion of the roof of a deserted cabin. The weight of

the snow had crushed in one end of the building. The gable of the standing end, which also held the fireplace chimney, stuck bravely above the drift. Hunegardt burrowed into the drift and, crawling under the wreckage, reached the unharmed portion of the cabin. He started a fire in the fireplace and stripped his socks to dry them. Sitting in the warmth he grew drowsy. Fight as he would he could not keep his eyes open. When he awoke with a start he found that morning had dawned. The fire had burned to ashes on the hearth and his socks had burned with it. Sockless, Hunegardt thrust his feet into his heavy mountain shoes, strapped on the snowshoes and set out again, his face to the west.

At about 11 o'clock that morning he found Hull and Wolf in a deserted cabin, where they had taken shelter. They had broken a pair of snowshoes and were helpless prisoners of the storm. They weren't alarmed. They knew help would come.

These are but a couple from the thousand and one tales of winter nights. Linemen tell them before the fires in cabins half buried in the snow. They are part of their "shop talk." To live these adventures and to return to tell them over constitute the "fun" of a lineman's job. Whether they perish in the doing they have but one ambition—to keep the line open.

Return Wiring Systems.

The Committee on Electric Wiring Systems of the Electrical Industry has appointed the following sub-committee to investigate bare grounded return wiring systems: C. E. Corrigan, Associated Manufacturers of Electrical Supplies, Pittsburgh, Pa., chairman; W. H. Flandreau, president International Association of Municipal Electricians, Mt. Vernon, N. Y.; J. C. Forsyth, American Institute of Electrical Engineers, New York; G. S. Lawler, Associated Factory Mutual Fire Insurance Companies, Boston, Mass.; C. Renshaw, Westinghouse Electric and Manufacturing Company, East Pittsburgh, Pa.; Wm. S. Boyd, Western Association of Electrical Inspectors, 175 W. Jackson Boulevard, Chicago, secretary.

The committee desires the co-operation of the entire electrical industry in this work, and to that end requests that all information and data on wiring systems having a bare grounded conductor be sent to the secretary.

Oddities of the Telegraph.

The Alaskan Indians consider it quite a privilege to enter a United States Signal Corps telegraph station and have a "McKinley man" (they still call soldiers "McKinley" men along the Copper River) "string talk" or "talk telegraph" for them. The following messages are actually on file at one of the Tanana river stations: "I much sick. Think bye and bye I die." The answer sent reads: "Sorry you much sick. When you die let me know."

A telegraph operator was recently severely injured when the automobile in which he was riding skidded against a telegraph pole. He evidently could not keep away from the wires.

The Messenger Boy.

When the telegraph messenger, hurrying in answer to a city call, found the mistress of the mansion marooned and trembling on top of the dining-room table, he valiantly engaged her assailant in single combat and straightway slew him, carrying off the mouse triumphantly by its tail, says an exchange. He collected his fee from the grateful princess and returned to the telegraph office, convinced that there was no life to be compared with that of the messenger boy. When, late in the day, he pushed his wheel five miles through mud, rain and dark to deliver a death message in the suburbs of the city, he was not so sure about the desirability of his job.

These are but two incidents in the varied life of a telegraph messenger—a life which calls into play whatever stock he has of tact, quickness, perseverance, courtesy, honesty, pluck, indeed all the qualities the ownership of which spells "Success" for any boy or man.

Is this life of the telegraph messenger a desirable one? Is it a school in which he is to be made or to be marred? These are important questions for many parents, for there are thousands of lads thus employed and the messenger school is turning out hundreds of graduates every year.

There has been some prejudice in the past against this form of employment, due to a misapprehension as to the character and conditions of the work. On the other hand, in the past few years the newspapers have found worth printing the multiplying instances—sometimes amusing, sometimes grave—where these boys have been called upon to perform curiously unique services and other services of trust and responsibility, in all of which they have rendered a good account of themselves. The fact is that in all walks of business life, and particularly in the telegraph companies, the ranks are full of men, even in positions of highest responsibility, who began their careers as messenger boys. Distinguished and well known examples are Andrew Carnegie and Thomas A. Edison.

The telegraph companies point to the opportunity which this employment offers to the boys—opportunity to show the stuff they are made of and opportunity to secure by merit better employment, for they constantly come in contact with employers on the lookout for bright boys. The telegraph companies are often asked to supply messengers to fill temporarily the places of unskilled employees away on vacations, and to perform services on special occasions. In their daily duties the boys are brought into personal contact with business and professional men, and when these men have permanent positions to fill they frequently pick messengers who have come under their observation or ask the telegraph manager to recommend bright boys. Indeed, the telegraph companies complain that it is impossible to keep for any length of time their best boys, for these are quickly taken from them.

Thus there is no doubt about the opportunity. Now what about the training? The telegraph companies are employing boys and young men to do work that the community must have done. Only active, strong youths are fit for the service. Can

it fail to be good for such boys to be thus engaged—earning an honest living, exercising their buoyant brains and muscles in the active world of affairs and gaining a practical education such as few occupations open to them?

What are they learning? They are learning that honesty, industry, courage, energy and resourcefulness are necessary qualities for success; they are learning independence and the happiness that comes from steady employment, from self-support. They soon realize what qualities they must cultivate to win out in the race. It is an interesting and exciting occupation. If a boy must work for a living at an early age, where can he find a better or more rugged school in which to test and build his character? The messenger's day is full and active. He is largely in the open air, getting the physical exercise, the variety of scent and the variety of occupation that appeals to the youthful imagination and is so necessary for his best development.

The companies who employ these boys have their welfare very much at heart. They do not knowingly suffer any boy to be exposed to bad influences through his employment. Suitable and sanitary quarters and baths are furnished for them; club rooms and libraries; educational classes; encouragement to join the educational and physical development classes of the Young Men's Christian Associations throughout the country; personal instruction by the managers—in all kinds of ways are the companies striving to improve the standard, moral and physical, of this branch of their service, for it is a highly important branch. It is the connecting link between each company and the public; the boys by their conduct make friends or enemies for their employers, and the latter, if actuated by no other than a purely selfish motive, are bound to train these boys to serve the public courteously and honestly.

The public will learn, if the subject is intelligently investigated, that the messenger boy is not only a very useful person, but one who is entitled to the respect and confidence of those who employ him. His is an exacting job; it does not wait on fair weather and it requires accuracy, quickness and tact, besides the common virtues of honesty and industry. It is a matter for congratulation that such a large proportion of the boys meet these requirements, and that they do meet them is the reason that so many of them climb to high places in all walks of business life.

Mr. J. Frank Howell, the well-known banker and broker of New York, in remitting to cover his subscription for another year writes: "In continuing my subscription to THE AGE you kept well within your usual good judgment. The only possible complaint I can think of at this time is that I read and reread each issue until I feel cross-eyed, then after retiring I reminisce shop in my sleep until a fatigue powder is necessary to quiet me. If you continue to present the equal of Greene and Telschow in each issue you will either have to raise your subscription rates or advertising rates. There was a great scramble in 'the street' for the Willis Jones story."

Some Telegraph Reminiscences.

BY J. L. EDWARDS, COLLINGSWOOD, N. J.

Living in the quiet seclusion of a beautiful borough in the southern part of the State of New Jersey, my thoughts often revert to many incidents, odd, comic and tragic, that occurred during my early career in the telegraph service, some of which may not prove entirely unentertaining to your readers.

I started to learn the House printing instrument in December, 1854, at the age of sixteen. Late in the spring of 1855 I was placed in charge of a minor office on the lines of the New York City and Suburban Telegraph Company at No. 4 Chatham Square, New York. I found already there two students over whom I was to perform the part of tutor. One of them was an actor who had been discharged from the old Bowery theatre company and, having failed in his dramatic aspirations, assumed the business of the telegraph, but soon disappeared.

The other was a young Englishman, who, I soon discovered, had no great desire to learn to operate but was merely seeking a lounging place. It was his daily custom to return from lunch in a state of semi-intoxication and, after sleeping off his stupor, to visit Barnum's Museum at Broadway and Ann Street. Of course such conduct conflicted with the morals of the office. Remonstrance was in vain so I took it upon myself as his professional guardian, manager of the office, battery man, line man and occasionally, messenger, to correct the evil. A boyish prank was my method.

During one of his profound slumbers I gently marked a half of a moustache (one side only) upon his bare face with the printing ink used on the instrument. He was not disturbed by the operation but awoke in due time. The looking glass had been removed from the wall and thus adorned, he was allowed to go forth to the Museum, there to vie with those hirsute freaks of nature "The Bearded Lady" and "The Woolly Horse" in the entertainment of the audience.

My student never returned to his studies.

The president of the company was John Hecker, founder of the Hecker flouring mills, still in existence. At one of the monthly meetings held in my office, at which he was presiding, he called me to his side and after looking me over asked me how I would like to work on his paper. On my asking him what kind of a paper it was, he replied, "The Churchman," the organ of the Episcopal church.

Controlled by a spirit of humor, I answered that if it was "The Picayune"—a comic weekly—I would talk with him.

General John J. Ingalls is credited with having said that "once, unbidden, opportunity knocks at every man's gate." Was John Hecker impersonating opportunity knocking at my gate? Perhaps, I should have acted as the Hon. Tom Corwin subsequently advised General Garfield, and assumed a serious, solemn manner.

Corwin was a brilliant man but he was possessed of an unrestrainable sense of humor and he regretted it. He had been governor of his state,

United States senator, ambassador to France and in other ways eminent in the service of the people, but he believed that he would have attained still higher honors had he been more seriously constituted. Under this conviction and in the interest of his cherished friend, he thus spoke:

"Garfield, be solemn, solemn as an ass. All the monuments in the world are built to solemn asses."

As lineman—a self-imposed duty—my experience was confined to a single instance.

A stranger called at my office and reported that a bracket supporting the line wire had broken away from a chimney on a house not far away. Like the ambitious youth who fired the Ephesian dome I was stirred by a sense of duty, to correct a wrong. With hammer and nails I went on my mission. I found the fault to be upon the roof of a building known as "The Old Brewery," located in the most disreputable section of the city called "The Five Points." Abandoned as a brewery this building became notorious in the criminal history of New York as the resort and refuge for criminals of the most desperate character but now—1855—occupied by evil doers of a milder type.

Ascending the rickety stairway of this building to the topmost floor, I knocked at the rude, half-open door of a squalid appearing room. My summons was answered by a scantily dressed, really beautiful girl of perhaps eighteen, of whom I enquired where I could obtain a ladder to reach the rafters, some twelve feet above, that I might get through the scuttle to the roof. I was kindly shown the ladder and was even helped to carry and raise it, my fair friend insisting that it was too heavy for a boy to handle alone.

Reaching the roof I replaced the bracket with the insulator and wire to the chimney and returned to the rafter to find that the ladder had been removed. I shouted to my obliging assistant, who promptly reappeared, and begged her to relieve my dilemma. With a roguish laugh, she informed me that by allowing myself to slide down the roof and over the edge I would reach the street much quicker than by the stairway.

Entreaties and appeals were of no avail and I was forced to accept her other proposition—to dangle and drop from the rafter. I performed this feat successfully much to her amusement for which she offered me an apple and the hospitality of her apartment while eating it.

Having in mind the performance of a similar act at the beginning of human existence, the foundation of earthly woes, I steeled myself against the blandishments of this modern Eve and, declining with thanks the proffered fruit, retired in good order.

It was the understanding of our superintendent that wherever there was an instrument there must also be a battery, consequently each of the ten offices throughout the city was supplied with ten cells of Grove battery.

This seems an absurd quantity of force for less than five miles of line until it is known that the resistance of the magnet in the House instrument was so extremely high that such force was required.

The peculiarity of the feature was the dividing up of the hundred cells among the ten stations.

Another illustration of the lack of knowledge of things electric was given when the superintendent of the Union Company at the office at 23 Wall Street accounted for the failure of their two wires at the same time by the fact that the ground wire running from an upper window to the earth, was not insulated from the brick wall after the manner of the lightning rod.

In 1848 I remember seeing the inside wires in the office at Wilmington, Del., insulated with glass beads strung upon them and the line wires were formed of six small wires twisted together. But of course all such crudities are pardonable when we remember that practical commercial telegraphy was but eight years old and that little was known of the science of electricity and of its application to the telegraph.

It was not until 1868 when Cromwell F. Varley came from England with his measuring and testing instruments, that we gained more complete knowledge of the various conditions of our lines and of the manner of more accurately proportioning the elements that go to make up a telegraph circuit.

The most profitable customer of the Chatham Square office was a Doctor Gompert, familiarly known as "The Black Doctor," because of his profuse black beard and habitually black clothing. He was a typical Shylock in appearance and in his dealings. Nothing was known concerning his line of practice as a physician previous to the period of which I am writing, but at that time his sole method of treatment was bleeding and his patients were exclusively lottery policy dealers whom he surely bled to his complete satisfaction and to their financial exhaustion.

His method was what he termed "the dead sure game," a most appropriate title, as the sequel will show.

The lottery was drawn in Wilmington, Del., publicly in the reading room of the principal hotel, lotteries being legal then. The numbers from 1 to 78 were printed on papers, the papers rolled and placed in metal tubes and then put into a large wheel with glass sides and a broad metal periphery in which was a sliding door. The wheel was revolved to thoroughly mix the tubes, then stopped, the door opened and a blindfolded boy thrust in his hand and drew forth a tube which was taken from him and the paper withdrawn, the number called out, the door closed, the wheel revolved to again mix the numbers.

This operation was repeated after the drawing of each number until seventeen numbers were drawn.

Our "Black Doctor" employed a corps of agents, one of whom was present at the drawing until the first three numbers were called. With these he would run to the telegraph office where, with quick service, previously arranged for, the numbers were transmitted and promptly reached their destination.

The operation of the drawing was necessarily slow and this fact gave ample time for the agents and their runners to work upon the numerous policy dealers throughout New York City with the first

three numbers, while the remaining fourteen were being drawn from the wheel.

When the numbers came to my office the doctor personally received them and rushed to the roof of the four-story building, marked them on a board attached to the end of a pole, raise it and allow a person on a building near, a policy dealer, to see the numbers through a telescope and run with them to his victim.

But there is an end to all things. His plot was discovered, the hour for closing the deals was changed and after months of success the "Black Doctor" was put out of business.

The blindfolded boy who drew the numbers from that lottery wheel in the late '40s became, in time, a telegraph messenger and passing along through the various grades of advancement eventually reached high official and executive positions.

He retired from the service fourteen years ago with a liberal fortune acquired through thrift and frugality in early life and judicious investments in after years, which he still lives to enjoy at the age of 79. Greetings to my old schoolmate James Merrihew.

Entering the service of "The Commercial House Printing Telegraph Company"—New York to Boston—in 1856, I was detailed as vacation relief to the various stations during the summer season.

While performing this duty in Bridgeport, Conn., I visited "Iranistan," the summer residence and farm of Phineas T. Barnum, the world-renowned showman, where I witnessed the amusing spectacle of an elephant drawing a plow in a field.

My sojourn in Providence, R. I., marked an odd incident and a tragic event. Arriving there at nine o'clock at night, I enquired of a colored man at the depot the way to the office of The House Telegraph. He directed me to follow him which I did and after a long walk he said, "Here you are, boy," and went on his way.

Entering the house to which he had pointed, I opened the first door I came to and passed into a room where, instead of finding a House telegraph instrument my eyes fell upon a long table with a revolving wheel at one end and a dozen or more coatless men sitting or standing around it. Hastily beating a retreat, I made further enquiry, eventually reaching my destination.

I afterward learned that I had been led to "The Telegraph House," a third rate hotel, and that the coatless men were gambling at roulette.

The tragic event occurred two weeks later. Walking along Westminster Street, in the early evening, accompanied by a fellow boarder, talking and laughing over an incident that had taken place at the supper table a little while before, suddenly there came the report of a pistol shot from the interior of a liquor saloon in front of which we had arrived. Falling against me my companion sank to the pavement dying, while the sound of his laughter floated away on the air.

On Saturday, April 12, 1861, I was working the New York end of the Washington wire when at about two o'clock in the afternoon, I received a message for the *New York Herald* dated Richmond,

Va., announcing the news of the firing upon Fort Sumter of the first gun of the war of the rebellion. An hour or two later, a message was filed upon my instrument addressed to the Mayor of Richmond containing the following warning: "Prepare yourselves or the North will be down on you like an avalanche." It was written and signed by William H. Heist, a southern telegraph superintendent, a visitor in New York at the time.

I did not feel inclined to send that message; to do so seemed like giving aid to the enemy and I wanted that avalanche to move along without meeting any prepared obstacles. Moreover, I knew that Mr. Heist had damned the American flag and had expressed a desire to trample it under his feet, and I was not disposed to do honor to either him or his message. With a view to having the message suppressed, I carried it to the manager, Mr. J. C. Hinchman, but he decided that it could have no essentially detrimental effect and directed me to let it go.

Determined, however, not to become a party to what I considered an unpatriotic act, I similarly expressed contempt for Heist and his message that he had expressed for the flag and placed it back on the unsent message file where it remained when I was relieved from duty an hour later.

But the bitterness resulting from the conflict have passed away and if Bill Heist and myself could get together we would chat smilingly over his message and my treatment of it, and drink to the patriotic sentiment uttered by Daniel Webster, the greatest of American statesmen, "Liberty and Union, now and forever, one and inseparable."

Marriage by Telephone.

Mark Twain once wrote what he considered a parody on the uses to which the new-fangled toy called the telephone might be put and made his hero meet a girl and court her by long-distance telephone. Courting by telephone has become common since then, but marriage by the same method is something new. However, it has been done, and now that the ice is broken it may be utilized to the resulting benefit of the telephone companies.

A couple out in Wyoming were all ready to be made man and wife when they learned that, owing to the immense snowdrifts, the clergyman who was to perform the ceremony could not arrive. It meant postponing the ceremony until spring, and that was not to be thought of, says an exchange.

The minister at Pinedale, forty-five miles away, was called up and asked if he would marry the couple by telephone. Being assured that the license was procured and the witnesses were on hand, he told the couple to join hands, and then began: "Dearly Beloved, we are gathered together here in the sight of God and in the presence of these witnesses," and so on through to the finale, "I pronounce you man and wife." He could not exercise his time-honored function of kissing the bride, but he heard the groom perform that rite so enthusiastically that it was audible over forty-five miles of wire. The telephone tolls were thirty-six cents, but the minister will wait until spring for his fee.

Answers To Questions.

[Readers of TELEGRAPH AND TELEPHONE AGE are invited to ask questions on matters relating to telegraphy and telephony which they would like to have explained. Such questions must be bona fide and signed by the person seeking the information. These names, however, will not be published.]

(48) Q.—I have been told that one of the early Atlantic cables was worked at one time by a battery made out of a gun cap. Is this correct? and where can I get some facts about it? A. W.

A.—The statement is entirely correct. The test was made to determine how small a current could be used in cable signaling. Mr. H. H. Ward, former cashier of the Western Union Telegraph Company at New York, and now in the banking business in East Orange, N. J., had the identical battery in his possession. TELEGRAPH AGE dated November 1, 1908, published an article on the subject, and the gun-cap battery was there illustrated. Mr. Ward three years ago presented the gun-cap battery to the Smithsonian Institution, Washington, D. C., where it is now on exhibition.

(49) Q.—In reading and studying some electrical works I sometimes come across a method of mathematical notation which I do not understand, and would like to have explained. For example, what is the meaning of 3.14×10^7 ? J.

A.—This method of representing large numbers is known as index notation. It avoids the use of long rows of ciphers. In the case given 3.14×10^7 is equal to $3.14 \times 10,000,000 = 31,400,000$. The method is easily learned, but to describe it here would require more space than we can give to it. A good description is given in "Arithmetic of Electricity," by T. O'Connor Sloane; also in Prof S. P. Thompson's work on Electricity and Magnetism, both of which books can be purchased of TELEGRAPH AND TELEPHONE AGE. The price of the former book is \$1.00 and of the latter \$2.00.

(50) Q.—Please give a simple rule for the winding of primary and secondary coils for an induction coil or a converter for a given ratio of conversion. J. A. R.

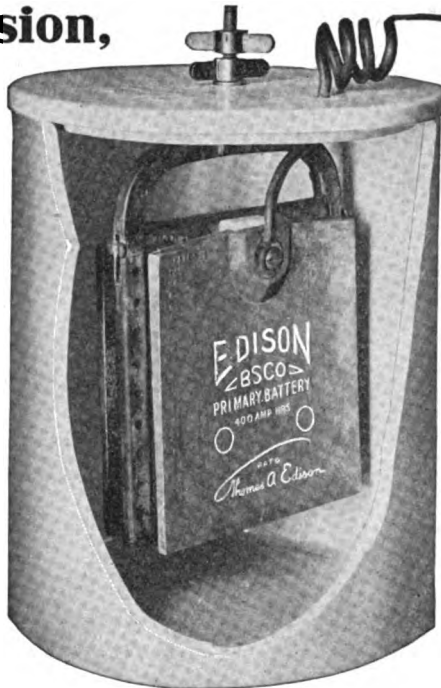
A.—The rule is: the convolutions of the primary are equal in number to the product of the convolutions of the secondary multiplied by the ratio of conversion, and vice versa. For example, if you have a coil with 100 convolutions in the secondary and wish to know the number of convolutions for the primary to give a ratio of 1 to 5, multiply 100 by 5 and you get 500, which is the number of convolutions in the primary winding.

"ENERGY" is the title of a magazine published monthly by the associated employees of the New Orleans Railway and Light Company. It is well gotten up and will be of deep interest to the employees of the company. Telegraph and telephone items will not be outside of its scope when occasion requires. Mr. E. L. Hawes is editor.

A wire chief baseball enthusiast in assigning operators to a quadruplex told one operator to take the pitching side and another to do the catching.

Clear Transmission, Always Necessary, Warrants Use of the Highest Grade Battery

A low internal resistance battery that will not polarize, and maintains constant voltage, is sure to give better results in telephone work than a set of cells whose voltage constantly drops when on discharge, or in which the voltage is high or variable.



Type 403 400 Ampere Hours Capacity

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maintain a lower uniform internal resistance than any other primary type; they furnish constant voltage and do not polarize at normal discharge rates; the 400 ampere hour size has a life greater than twenty single sets of dry cells and they require no attention between recharges, even though the service is such that a period of years is required to consume their capacity.

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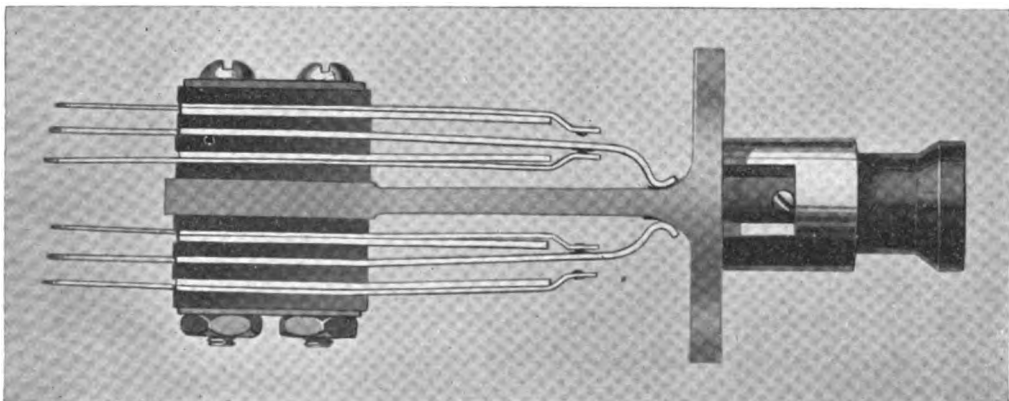


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KEY

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Insulated to meet railway telephone requirements



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Made in a wide variety of contact combinations.

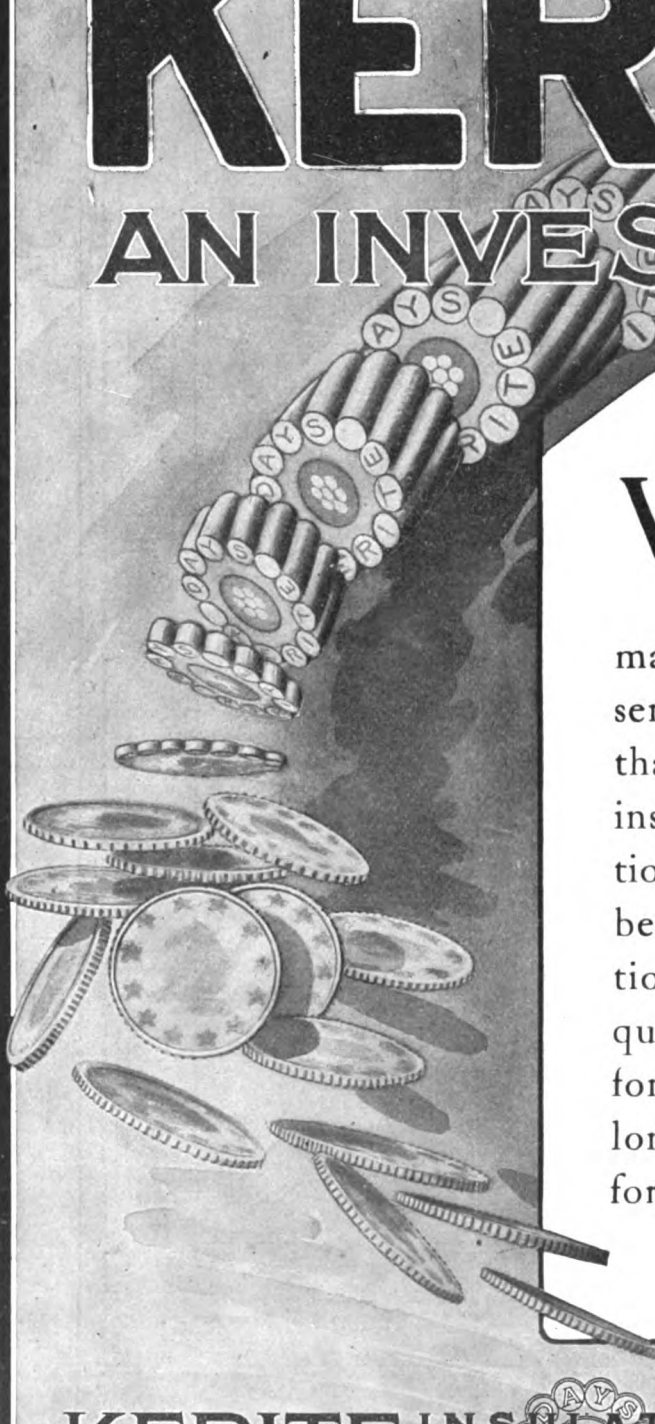
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An illustration of a Kerite cable, which is a multi-strand cable with a central core and multiple outer strands, each with its own insulation. The cable is shown in a coiled, descending fashion. Below the cable, several coins are scattered, some showing the profile of a person and others showing a star pattern. The background is a dark, textured surface.

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Convention of Association of Railway Telegraph Superintendents, St. Paul, Minn., June 20-23.

[Next convention Washington, D. C., September 18, 19 and 20, 1917.]

The thirty-fifth annual convention of the Association of Railway Telegraph Superintendents was held at the Hotel St. Paul, St. Paul, Minn., June 20, 21, 22 and 23, with an attendance of 220 persons, including guests and members.

President E. C. Keenan welcomed the members and afterwards introduced Mr. Claude L. Matthews, who gave some facts regarding Jovianism. There are 15,000 Jovians in the United States, he said.

Prof. G. D. Shepardson, of the University of Minnesota, made an address in which he outlined the development of electricity from the earliest days. He said that the world gave Galvani credit for discovering electricity, but in reality it was his wife who was entitled to the honor. She was preparing a frog leg dinner when she noticed the twitching of a frog's leg when she used a steel knife.

Steinheil was the first to discover that the earth could be used as a portion of an electrical circuit.

He discussed the principles of modern methods of grounding.

At the conclusion of Prof. Shepardson's remarks Hon. V. R. Irwin, mayor of St. Paul, entered the room and in a few words welcomed the members and guests to St. Paul.

Mr. C. H. Wilson, general manager Long Distance Lines, American Telephone and Telegraph Company, New York, gave an interesting talk on the rapid progress in telephony during the past year. The recent test of wire and wireless telephony by the War and Navy departments, he said, were very satisfactory to the government. Wireless telephony for railroad work, he continued, was making great progress.

He announced that the American Telephone and Telegraph Company is building a wire line between Jacksonville and Key West, Fla., to connect with a wireless service with the various islands in the West Indies, and closed his remarks by expressing the regrets of Mr. Theo. N. Vail, president of the American Telephone and Telegraph Company and of Mr. Newcomb Carlton, president of the Western Union Telegraph Company, at their inability to be present. Both sent their kindest regards and best wishes for a successful meeting.

The following new members were then elected:

ACTIVE MEMBERS.

J. W. McCurdy, superintendent telegraph and telephone, Associated Pipe Line Company, San Francisco, Cal.; H. Hulatt, manager telegraphs, Grand Trunk Railway System, Montreal, Que.; C. W. Fraher, supervisor construction and maintenance, Chicago, Burlington & Quincy Railroad, Chicago; W. H. Flann, superintendent of telegraph, Northern Pipe Line Company, Oil City, Pa.; Hilliard C. McConkey, superintendent railway telegraph and maintenance, Canadian Northern Railway, Winnipeg, Man.; C. O. Van der Vort, engineer tele-

graph department, Michigan Central Railroad, Detroit, Mich.; J. E. Drewry, telegraph inspector, Illinois Central Railroad, Memphis, Tenn.; W. J. Williams, superintendent of telegraph, St. Louis and Southwestern Railroad, Tyler, Tex.; Claude Mitchell, acting superintendent telegraph, Gulf Coast Line, Houston, Tex.; D. L. Howard, superintendent telegraph, Canadian Pacific Railway, Calgary, Alb.; W. T. Davis, superintendent telegraph, El Paso and Southwestern Railway, El Paso, Tex.

ASSOCIATE MEMBERS.

George H. Groce, railway department, Electric Storage Battery Company, Chicago; W. H. Fenley, sales engineer, Kerite Insulated Wire and Cable Company, Chicago; W. C. Titley, division plant superintendent, Western Union Telegraph Company, Denver, Col.; J. E. Dempsey, Dempsey telegraphic code, Chicago.

Mr. C. H. Gaunt, general manager, Western Division, Western Union Telegraph Company, Chicago, was elected an honorary member.

The reports of the president and secretary-treasurer were then read. President Keenan reviewed the work of the association during the past year, and commended the chairmen and members of the various committees for their work.

Secretary P. W. Drew reported an increase of 26 members for the year, making a total membership of 210.

As treasurer Mr. Drew showed the association's finances to be in a satisfactory condition.

The committee on resolutions reported on the deaths of Belvidere Brooks, S. A. D. Forristall and G. L. Lang, and a suitable memorial was placed upon the minutes.

At the afternoon session Mr. G. A. Cellar, chairman of special committee No. 1, on "Construction and Maintenance—Outside Plant," read the report of that committee, and a lengthy discussion ensued. (An abstract of this paper will appear in a later issue.)

President Keenan stated that pole line construction was an important question with the members. He thought that separate specifications should be prepared for different sections of the country.

The loading of the lines by sleet received much attention in the discussion. Mr. P. W. Drew spoke of the ability of iron wires to stand up in sleet storms as against copper. Mr. Geo. A. Cellar endorsed Mr. Drew's remarks with regard to the superiority of iron wires to stand up under heavy loads.

Mr. Wm. Marshall, assistant manager telegraphs, Western Lines, Canadian Pacific Railway, Winnipeg, Man., favored shorter poles and longer cross arms.

Mr. C. A. Parker, of the Denver and Salt Lake, told of the difficulties experienced on his road in keeping up the lines, and pointed out that when

strong poles are used the wires are more liable to break.

Mr. E. C. Keenan thought that regional specifications should be prepared to fit conditions.

The discussion was participated in by Messrs. W. P. Cline, W. F. Williams, C. S. Rhoads, E. A. Chenery and many others.

At Wednesday's session the report of special committee No. 2, on "Construction and Maintenance—Inside Plant," was read by Chairman M. H. Clapp.

CONSTRUCTION AND MAINTENANCE OF INSIDE PLANT.

The committee on the Construction and Maintenance of Inside Plant states that there is a great variation in the standards and practices being followed by the different railroads in the installation and maintenance of telephone and telegraph apparatus. In general, each railroad is installing and maintaining its equipment according to its own instructions and there is a decided lack of uniformity in specifications and standards that have been adopted by the different railroads. For obvious economical reasons, it is considered by the committee very desirable to adopt approved and uniform practices as far as practicable in connection with at least the commoner forms of telephone and telegraph equipment to be installed, operated and maintained. In order to carry out this plan, it is thought desirable for the association to issue as recommended practice standard plans, specifications, instructions and routines for use in installing, operating, maintaining and inspecting telephone and telegraph apparatus and materials.

In order to make a start in carrying out the general plan recommended, the committee suggested two specifications or instructions for consideration this year.

1st. General specifications for location and wiring of equipment.

2nd. Maintenance instructions to section linemen, telephone inspectors, users of the telephone and telegraph, including operators, wire chiefs and managers in connection with inside plant.

These two suggested specifications were included in the report as exhibits C and D. In exhibit C there is a particularly good reference to ground wires.

This report was discussed in detail and was amended in many of its provisions.

In discussing the section of this report relating to batteries Mr. A. Wray, assistant superintendent, Chicago, Rock Island and Pacific, described and illustrated on the black board a new machine current battery of his invention for general use, of the direct and alternating current types, which, he said, has given satisfactory results. It does away entirely with the use of dry batteries. A great deal of interest was manifested in Mr. Wray's description and operation of the invention. The report of the committee was accepted as a progress report.

The next paper read was the report of special committee No. 3, by Mr. E. A. Chenery, chairman. This report was on the subject "Wire Chief Equipment and Routine." an abstract follows:

WIRE CHIEF EQUIPMENT AND ROUTINE.

Special committee No. 3 reported on specifications covering wire chief equipment and routine in railroad offices. These specifications are intended to cover in a general way recommended practices as to the equipment to be used and the routine to be followed in wire chief offices on railroads.

In laying out offices and providing equipment, every consideration should be given to the prospects for future growth and to the prospects for the conversion of telegraph systems into telephone systems.

The equipment for offices of various classes is briefly described.

In the matter of office layouts the report says that inasmuch as wire chiefs will be, as a rule, required to perform other duties, including the supervision of repeaters and multiplex apparatus, and, in some cases, telegraphing, it is essential that the office be compactly arranged so that a minimum amount of time and effort will be required of the wire chief in going from one task to another. Local conditions will generally govern the exact manner in which a wire chief office shall be laid out. Some general recommendations are made, and these are followed by instructions for the testing of telegraph and telephone wires. Master selector or signaling office equipment, and phantom and composited circuits are also discussed.

In the discussion many members described the practice followed on their roads, and the report was amended in many of its details and finally adopted as the practice of the association.

Committee No. 4 submitted its report on "Protection against Electrolysis," through Chairman Wm. Bennett.

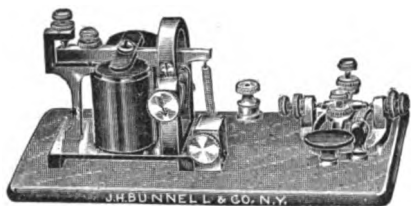
PROTECTION AGAINST ELECTROLYSIS.

Committee No. 4 on "Protection against Electrolysis" submitted a statement of what has been done up to the present time in the matter of protection against electrolysis. The report covered preventive or mitigating methods in general; causes and effects of electrolysis; necessity of making an electrolytic survey immediately after cables are placed underground and at periodical intervals thereafter; methods of making preliminary and final surveys; difference of potential between points on the cable system and the adjacent earth; deductions to be made from the surveys; instruments necessary for making surveys; importance of careful installation of conduit and cable; methods of bonding, and the advisability of making graphic records. The experiences of various members are described, and illustrations of voltage testing rods are shown.

In the discussion of this subject Prof. G. D. Shepardson made some general remarks on the subject and described the most modern methods of dealing with the problem. He thought it was a matter that the association could very profitably consider. The report was accepted.

Chairman J. F. Caskey of committee No. 5 read the report of that committee on the subject of "Protection Against Lightning and High Tension Cir-

Dispense With Expensive and Troublesome Local Batteries

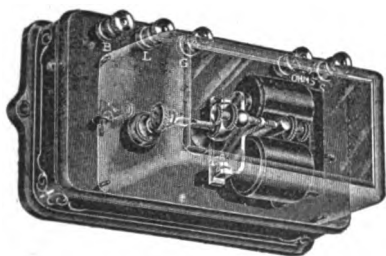
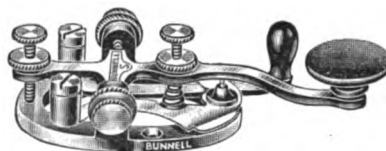


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Remember that with the GHEGAN "KICK-OFFS"

at terminal stations, communication with and between way stations on leaky lines is always possible. Try them and be convinced.

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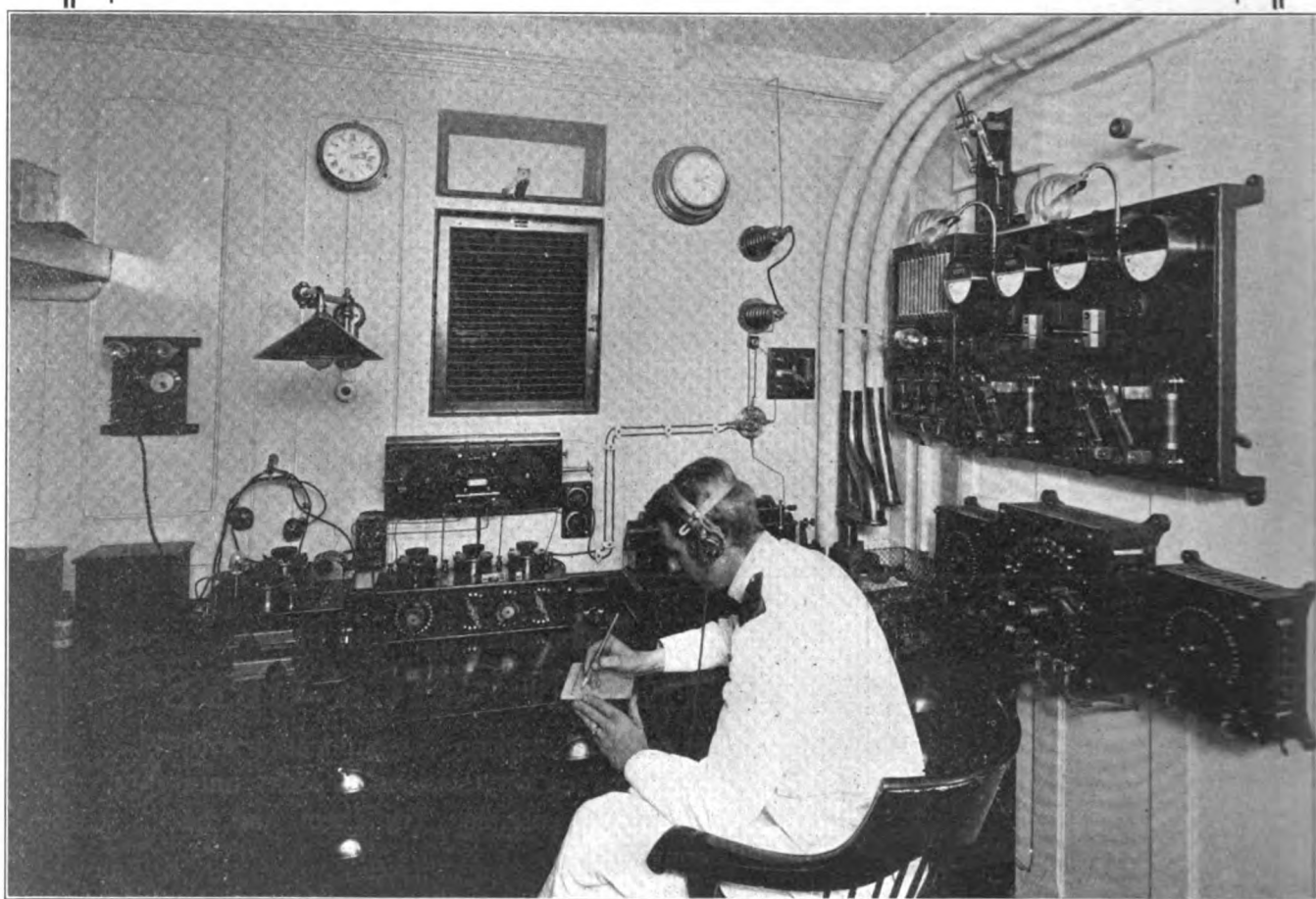
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To and From Ships in All Waters***

The operator shown in the picture is on a liner in Mid-Atlantic receiving a message from Chicago via Cape Race Shore Station.

More than 1800 merchant ships are equipped with Marconi apparatus. Various types are designed for the Merchant Marine, Warships, Submarines, Yachts, Air Craft, Signal Corps, Railway Trains, etc.

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cuits." (This report will be published in a later issue.)

The discussion developed many interesting facts in the practice of some of the members. Messrs. I. C. Forshee, W. Rogers, M. B. Wyrick, A. Wray, M. H. Clapp and others outlined the methods employed on their respective lines, and Mr. W. C. Titley of the Western Union Telegraph Company made a few remarks on the subject. The report was accepted as a progress report.

Mr. C. S. Rhoads, read the report of committee No. 6, on "Telephone Development."

TELEPHONE DEVELOPMENT.

The report of the special committee No. 6, on Telephone Development, starts with a history of the use of the telephone on railroads.

The use of the telephone for train dispatching, the report states, affords opportunities for the most efficient operation in that a larger volume of traffic can be handled with no increased dispatching force. This has been demonstrated on many lines during winter months or heavy traffic periods when additional train dispatching districts had to be created for no other reason than that the Morse circuits could not carry the load.

There seems to be practically no limit to the capacity of the telephone in this work, for which there are several reasons.

1st. The efficiency of the operators has been greatly increased. Experience has shown that only a small per cent. have any trouble whatever receiving or transmitting orders and messages with the telephone, while on the other hand many were poor Morse operators.

2nd. The loss of time of calling offices has been practically eliminated. While this may not seem to be of great importance yet close estimates show that at least one-sixth of the day was lost in this manner.

3rd. Siding telephones located in booths and pole boxes can be freely distributed along the division, thus giving employes access to dispatcher without going to stations, which facilitates handling of trains and eliminates loss of time.

4th. Portable sets are supplied to the crews of passenger, freight, wreck and work trains. These put the crews in immediate touch with the dispatcher from any point along the line.

Unquestionably further improvements will be made in present types of apparatus and new types of apparatus will undoubtedly be developed to replace present types in order to provide in a more efficient and economical manner the same classes of service that are now being given.

Owing to the great destruction of open wire plants by storm, particularly during the winter months, and the resulting prostration of the service, it is believed that aerial and underground cable will be used to a much greater extent in the future.

The development of the printing telegraph has already reached the stage where there is no longer a question of its commercial value, and as the possibilities in connection with the use of this equip-

ment are more fully realized, its application will be extended to various branches of the service and, in all probability, a great deal of the railroad business, which is now carried on between division headquarters and widely separated centers by mail, will be handled with the printing telegraph. This will unquestionably result in very greatly increasing the efficiency of the branches of the service making use of this equipment.

What has been done in selectively controlled signals, it is felt, is only a mere beginning and it is believed that the future will bring forth a wide application of telephones and selectors to signal operation.

While for everyday operation of the train, message, private branch exchange and other branches of the railway telephone service it is felt that the wire system will continue to be the most important means of communication, there will undoubtedly develop a use for wireless telephone and telegraph service, which will be of material advantage in conducting the business of a railroad system.

In summarizing its report the committee states that it is felt that the telephone will be used exclusively for all short line work and that the telegraph will be used only between division headquarters and widely separated points and that, further, in this latter service the printing telegraph will largely replace the manual telegraph of today.

The discussion was general and the report was accepted as a progress report.

The meeting then went into executive session, which concluded the day's work.

THURSDAY'S SESSION.

The report of committee No. 7 on "Railroad Message Traffic" was read by Mr. M. B. Overly.

RAILROAD MESSAGE TRAFFIC.

The committee on Railroad Message Traffic reported on the use of quadruplexes, duplexes, etc., to handle message traffic by Morse; handling messages by telephone; handling messages by printers; and coding, censorship, etc.

Quadruplexes and duplexes were reported on by Mr. M. P. Overly.

Whether it is advisable or practicable for any railroad to use any or all of the various types of multiplex telegraph apparatus, he said, will depend upon the volume of business to be handled, the size of railroad, and the number and kind of wires available. Its usefulness will depend largely on how thoroughly familiar the wire chiefs or other attendants are with this kind of equipment.

He then described at some length the methods and practice on his line, the Big Four, in regard to the use of the quadruplex and duplex.

Mr. W. L. Connelly reported on the handling of messages by telephone.

It is generally admitted, he says, that telephone message circuits are a very useful facility in the progress of telephone operation on railroads for the handling of messages; also as an auxiliary circuit when dispatchers' telephone circuit is in trouble, and most roads are endeavoring to obtain telephone message circuits after they have been

equipped with dispatchers' telephone circuits. It is the consensus of opinion of those in charge on roads having telephone message circuits that they are an advantage as compared with Morse as follows:

Telegraphers not required; direct communication obtained, thereby greatly reducing the number of messages; calls answered more promptly, and greatly speeding up the service.

Information on the subject of handling messages of printer was given in tabulated form.

Regarding censorship, coding, etc., Messrs. W. H. Hall and W. H. Potter, reported that eight questions were sent to active members. Out of fifty-one replies received nineteen are of the opinion that more time is lost in coding and decoding than is gained on wires, three of these excepting coded phrases used many times each day, and day after day, and one limiting such code to fifty phrases and sentences.

It is the general opinion that large codes are expensive, much more time being lost in coding and decoding than is gained on the wires.

It is the opinion of several that with a small code persons using soon become familiar with code words and no time is lost in coding and decoding, one suggesting that code words be suggestive, as an aid to memory. The opinion is expressed that it does not take longer to code and decode than to write out in full.

Eighteen roads are of the opinion that small codes are practical and effect a saving in money, two of these limiting such benefit to large roads only.

Different roads class small codes as containing from twenty-five to five hundred words.

One road has found that where telegrams are relayed once or more, time saving on the wires over-balances time lost in coding and decoding, but where sent direct coding does not pay, and thinks conditions should govern use of codes.

Opinion expressed by three roads is that codes are advisable where wires are over-crowded and use of code will avoid additional facilities.

One railway's experience has been that codes seem to make but little difference in telegraph work with clear and legible copies, while poorly written code words are an abomination, causing delays and errors.

Eight roads concur in the opinion that codes reduce the speed of service and cause more or less errors.

It has been the experience of one railway that codes cause delay to important telegrams, on account persons handling being unaware of their importance.

One road has found a large code to be impractical and that a small code will not cover.

It has also been the experience that codes are not used when they should be, and when used are often improperly used.

Fourteen roads have found codes practical for purpose of privacy or secrecy, and some believe secrecy is the only excuse for coding.

Four roads have found codes in commercial

business to be a good plan from an economical standpoint.

In addition to the use of small codes, the committee recommends the use of symbol letter and file number on all telegrams, as referred to at length in paper printed in proceedings of the annual meeting held at Rochester, June, 1915.

In discussing the section of the paper relating to the use of duplexes and quadruplexes, Mr. W. J. Camp stated that there was a limit to the working of long lines through repeaters. He mentioned a test between Montreal and Vancouver and back. The signals coming back "petered out," he said. In one case the word "this" came back to the originating point minus the two first letters. On another occasion he tested the retardation on a thousand-mile line with one repeater in it. There was a retardation of one-half second. Four repeaters are employed on the Montreal-Vancouver line.

Mr. W. Rogers of St. Louis pointed out the value of the polar duplex in wet weather compared with single line operation.

Referring to telephone message circuits Mr. E. C. Keenan stated that such circuits were a success in handling car reports, and that they were twice as good as the telegraph. Printers are successful, he said, where there is a load.

Mr. J. O. Carr, of the Morkrum Company, Chicago, said there was no question in regard to the ability of printers to work on railroad wires. It is merely a question of whether printer operation on a particular circuit will show a saving over Morse operation. From figures obtained from the Chicago, Burlington and Quincy and the Southern Pacific railroads on circuits which handle about 900 messages per day, a very considerable saving is shown, in one case amounting to about 35%. However, as a volume of business on a given circuit decreases, the rental factor, which must be added to the cost per message is relatively greater, and from data already obtained it would not seem to be economical to operate printers on circuits where the load is much less than 500 or 600 messages per day.

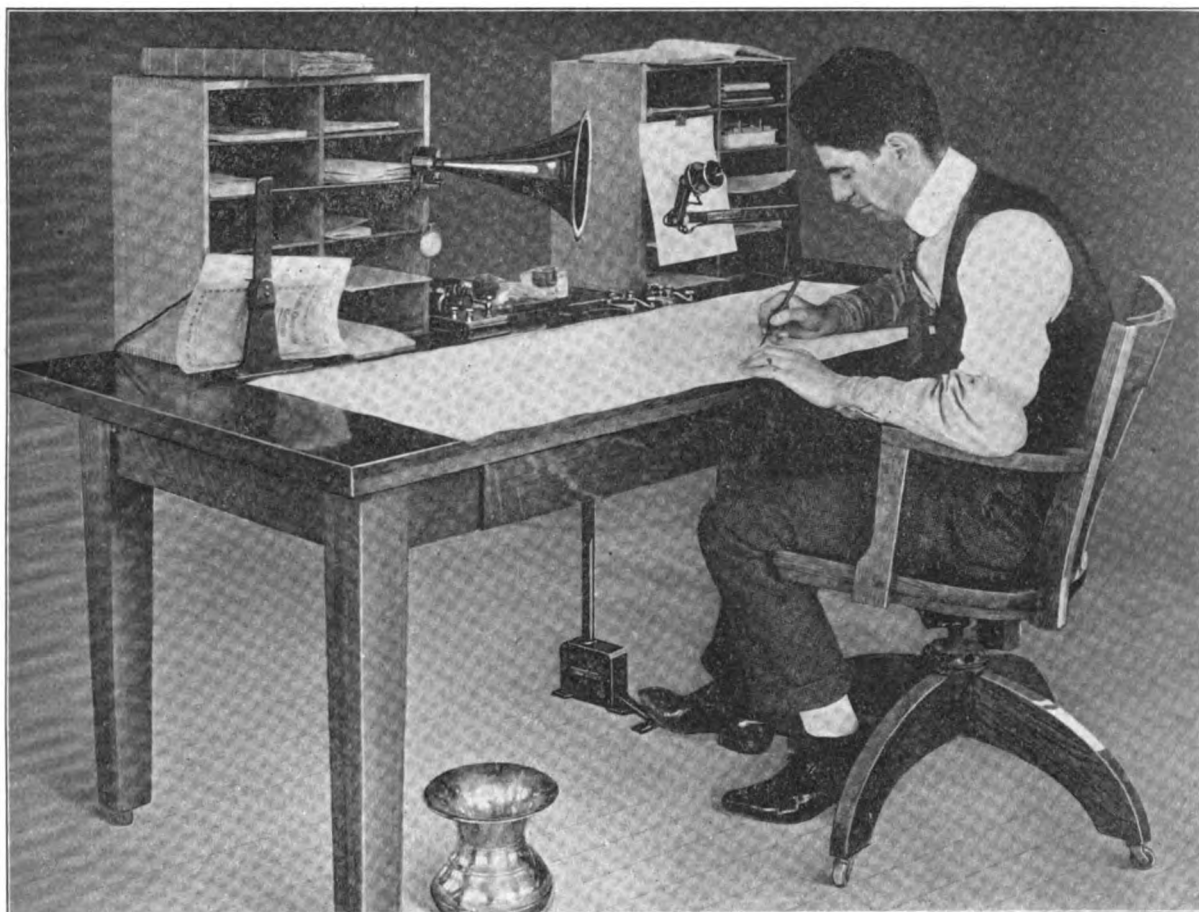
Mr. Camp stated that there were fewer errors made on the printer than were made by first-class operators.

The part of the report relating to codes was generally discussed. Mr. J. E. Dempsey described his code and its uses. It is a five-letter code.

Mr. Wm. Bennett spoke favorably of the Dempsey code, which is used on his road, the Chicago and Northwestern.

Mr. G. W. Jett, of the Norfolk & Western Railroad, explained his code, which has been in use on his road for the past eighteen months. He uses letters for figures in representing car numbers, etc., and in writing car initials he forms one word by giving the letters of the initials of the words of the names of the railroads. His code is of the five letter type. The report was accepted.

The report of committee No. 8 on the "Full Use of Wires," was read and accepted as a progress report. There was no discussion. (This report will be published in a later issue.)



Stentor Loud-Speaking Dispatcher's Set

This set can be applied to existing telephone circuits, in dispatcher's office, or at any point of line.

Complete Stentor equipment for new circuits, to meet all conditions of railroad operation, dispatchers' lines, yard circuits, block signal circuits, message circuits, inter-communicating systems, etc.

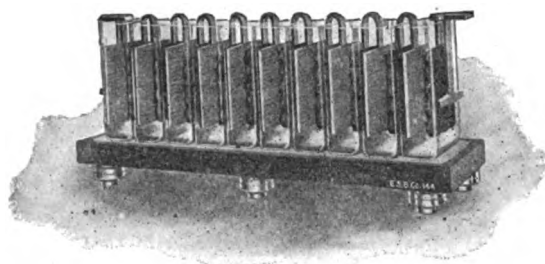
We manufacture a complete line of telephone equipment for all purposes, both of the standard type instruments and for loud speaking service.

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By the use of modern, simple charging apparatus,
a storage battery is the most economical and
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PHILADELPHIA, PA.
1888-1916

Rochester
San Francisco

Detroit
Denver

St. Louis
Toronto

"Wireless Telegraph and Telephone Development" was the topic of the report of committee No. 9.

WIRELESS TELEGRAPH AND TELEPHONE DEVELOPMENT.

After reviewing the development of wireless telegraphy in trans-Atlantic work the report states that it was not until November 24, 1913, that wireless telegraphy was introduced in railroad operation. This was on the Lackawanna Railroad.

The wireless telegraph, the report continues, serves as an auxiliary means of communication, in the event of interruption to wire facilities. There is hardly a railroad in this country which has escaped an entire loss of wire communication on some parts of its line during the past year and during such interruptions almost any amount would be cheerfully expended if some means of communication could be found to ascertain the whereabouts of trains and the conditions existing at points entirely cut off from service.

It is not necessary for each railroad to install towers and wireless equipment along its entire line, especially in territories where one or more roads parallel one another. The different railroads, with terminals in the same city, can erect an efficient station and jointly share the expense of operating it. A few such stations at the more important terminals, operated in this way, would soon convince them of the merits of the system and each railroad could then expand, erecting additional stations along its individual lines, as the service might require.

Referring to wireless telephony the report says the accomplishments of the last year have merely demonstrated the principles and possibilities. At the present moment there is not a wireless telephone on the market capable of giving as satisfactory service as the wireless telegraph.

Wireless telephony, when perfected, will be more applicable to moving trains, especially as it will then not be necessary to employ a special man on trains equipped with the wireless system.

A letter from Mr. J. J. Carty, chief engineer of the American Telephone and Telegraph Company, New York, was read. Mr. Carty stated that in view of the long distance telephone tests made last year and this, it was shown that there is no limitation to the distances over which wireless telephony is possible. There is no difficulty in handling any required amount of power, nor is there any difficulty in obtaining any required sensitiveness at the receiving end. The wireless telephone, however, in common with the wireless telegraph, still presents a number of problems which have been only partially worked out. He referred particularly to the interference of wireless messages on each other and to the interference from atmospheric disturbances generally known as static, and to the lack of secrecy in wireless messages. At the present time, however, they form very rigid limitations to the use of wireless. There are inherent reasons, he said, why we must expect wireless to always be limited in its application as compared to wire work-

ing. It has been amply demonstrated that we must not look to wireless to replace the wire plant, but to extend and supplement it. Regarding the use of wireless telephone or telegraph for railroad purposes, Mr. Carty said it seemed to him that the requirements and conditions of railroad service are not sufficiently different from the requirements and conditions the telephone company has to meet in its important toll service to expect that different conclusions in the two cases should be reached regarding the use of wireless. Whether the value of a wireless installation as an emergency facility justifies at the present time the expense is a question for the railway officials.

Prof. Chas. A. Culver, of Beloit College, Beloit, Wis., gave a summary of experiments carried out over the Lackawanna Railroad, which showed that it is possible to put any way station in wireless communication with moving trains without the employment of aerial wires at the fixed station. Standard radio equipment was used in these tests. The speaker also outlined other recent progress in the art, particularly the present tendency to use continuous waves as generated by oscillating arcs. The simplicity of the arc systems was illustrated by an actual transmitter of this type.

Mr. Philip E. Edelman, of St. Paul, stated that what railroads want was a practical system, cheap, serviceable and requiring no skilled operators. He represented a system of wireless telegraph or wireless telephone which, he said, was practical in railroad work for any distance up to 500 miles. He also proposed a combined wireless telegraph and wireless telephone costing little initially, with low operating expense.

Mr. J. J. Ghegan, of New York, stated that he had a wireless receiving set in his house with no antenna whatever on which he received signals from stations between and including Boston and Key West. This is the day of efficiency in wireless, he said, and the time was coming when we would be able to carry a wireless outfit in the pocket.

Mr. I. C. Forshee, of the Pennsylvania Railroad, Philadelphia, stated that the recent experiments of the American Telephone and Telegraph Company with wireless combined with wire telephone have opened up new fields which will make possible the application of wireless telephony to train operation in later developments. An installation to be of value for emergency purposes should be dependable under all weather conditions and at any time of day for 365 days a year.

Washington, D. C., was selected as the place for the next annual convention, and September 18, 19 and 20 as the dates.

The election of officers resulted as follows:

President, M. H. Clapp; first vice-president, J. F. Caskey; second vice-president, F. T. Wilbur; secretary-treasurer, P. W. Drew.

Immediately after his election Mr. Drew stated that owing to the heavy demands upon his time by his regular work and that of the association he felt compelled to tender his resignation. His resignation was accepted with many expressions of

regret, but was afterward modified so that he should hold the office of secretary-treasurer until a successor was appointed by the president. Mr. Drew has held the office for thirty-three years.

Mr. W. P. Cline was elected chairman of the Eastern Division, and Mr. L. M. Jones chairman of the Western Division.

Resolutions of thanks were passed for the favors extended by the Railway Telegraph and Telephone Appliance Association, the Hotel St. Paul, the American Telephone and Telegraph Company, the Northwestern Telephone Exchange Company and the Western Union Telegraph Company.

After an expression of thanks by Mr. Keenan to the members and officers for their support during the past year, the convention adjourned.

ENTERTAINMENT.

The entertainment of the party, especially the ladies, was liberal and well planned.

At 8 p. m. Monday, June 19, there was an informal reception at the Hotel St. Paul.

Tuesday, June 20, the ladies were given a luncheon and an afternoon theatre party and later all hands were entertained at dinner at Wildwood.

Wednesday, June 21, the time of the ladies was filled with a luncheon at the Minnesota Club and a sight-seeing automobile ride. In the evening there was a banquet at the Hotel St. Paul in which the entire party participated. The menu was a specially fine one, and an orchestra rendered some excellent music. After the dinner addresses were made by E. C. Keenan, E. P. Griffith, Prof. G. D. Shepardson, W. E. Hall, Mrs. Wm. Bennett, W. J. Camp, A. D. Walters, B. A. Kaiser, M. B. Wyrick, J. J. Ghegan, G. A. Cellar and Wm. Bennett, and after the singing of "America" the party disbanded.

A luncheon on the roof garden of the hotel and shopping trips occupied the time of the ladies Thursday, June 22.

On Friday the entire party went by trolley to Minnetonka Beach and took a steamer ride on the lakes. Dinner was served at the Hotel del Otero. The weather was bright and cool and a very enjoyable time was had.

All the entertainment was given by the courtesy of the Railway Telegraph and Telephone Appliance Association and those in charge deserve much credit for the excellent manner in which the entertainment was planned and carried out.

NOTES AND EXHIBITS.

The Hotel St. Paul proved to be an excellent selection. It is thoroughly modern and provided with every comfort and the utmost care was given to the welfare of the party.

The Automatic Electric Company, Chicago, was represented by Mr. J. H. Finley. A Fuller block storage battery and a Jester Cooper repeater were shown.

The Electric Storage Battery Company, Philadelphia, Pa., distributed a pamphlet on the use of the storage battery in selector service for telephone train dispatching. Mr. G. H. Groce represented the company.

J. H. Bunnell & Co., Inc., New York, exhibited

samples of "The Supreme Key;" the "M C M" main line sounder; the Ghegan "Kick-off" and line discharger and several cells of the Jove dry battery. The key has tungsten contact points; a phosphor bronze lever and a special lip for the insertion of the plug of a hand-sending machine. The "Kick-off" provides means for preserving communication with and between way stations on leaky lines. The "M C M" main line sounder does away with the use of local batteries, with their attendant care and expense. The company was represented by Mr. J. J. Ghegan, president, and Mr. C. E. Graham, treasurer.

Among the companies represented at the convention were the Morkrum Company, by J. O. Carr; the Electric Storage Battery Company, by G. H. Groce; the American Telephone and Telegraph Company by C. H. Wilson and W. E. Bell; Automatic Electric Company, by J. H. Finley; the Western Union Telegraph Company, by J. C. Hubbard, E. Parsons, W. W. Watt, W. S. Wood, M. B. Wyrick, W. C. Titley, R. W. Kean, M. L. Lane, A. Young and J. J. Monzingo; Thomas A. Edison, Inc., by F. J. Lepreau; Western Electric Company, by G. K. Heyer, J. C. Field, J. B. Harlow, J. C. Binning, A. L. Frankenberger; J. H. Bunnell & Co., Inc., by J. J. Ghegan and C. E. Graham; Kerite Insulated Wire and Cable Company by W. H. Fenley and G. A. Graber. Other interests were also represented.

ATTENDANCE.

Those present were:

Angelica, N. Y.—Mr. and Mrs. C. L. Lathrop.

Atlanta, Ga.—Mr. and Mrs. W. H. Adkins.

Aurora, Ill.—Mrs. C. A. Worst.

Battle Creek, Mich.—H. H. Hubbard and son; Mr. and Mrs. E. D. Hubbard and daughter.

Baltimore, Md.—B. F. Thompson.

Beloit, Wis.—C. A. Culver.

Boston, Mass.—F. P. Brennan.

Buffalo, N. Y.—W. T. Pickard.

Calgary, Alta.—Mr. and Mrs. D. L. Howard, son and daughter.

Chicago, Ill.—Ray N. Baker, W. E. Bell, Mr. and Mrs. Wm. Bennett, Mr. and Mrs. J. C. Binning, E. A. Burkitt, J. O. Carr, W. L. Cook, Mrs. A. V. Cornish, D. R. Day, J. Edwin Dempsey, Mr. and Mrs. P. W. Drew, J. E. Drewry, Mr. and Mrs. W. H. Fenley, Mr. and Mrs. J. H. Finley, Mr. and Mrs. A. G. Francis and Roger Francis, Mr. and Mrs. C. W. Fraher, Mr. and Mrs. G. A. Graber, G. H. Groce, H. C. Hewes, Mr. and Mrs. V. T. Kissinger, F. J. Lepreau, J. M. Lorenz, Mr. and Mrs. W. C. Lindsay and daughter, Mr. and Mrs. H. W. Lucia, Wm. Mueller, E. Parsons, Mr. and Mrs. E. A. Patterson, G. O. Perkins, Miss Margaret Pfisterer, Mr. and Mrs. R. W. Potts, E. O. Sternberg, Mr. and Mrs. G. R. Stewart, H. H. Simmons, Mr. and Mrs. F. H. Van Etten, W. W. Watt, W. S. Wood, C. A. Worst, A. Wray, Mr. and Mrs. M. B. Wyrick and Miss E. Wyrick, J. H. Young.

Cleveland, Ohio—A. Behner, R. F. Finley, C. S. Pfisterer, Mr. and Mrs. W. R. Pfisterer.

Decatur, Ill.—Mr. and Mrs. J. P. Church.

Denver, Col.—F. A. Cannon, J. L. Henritz, F. E.

Horton, E. E. McClintock, Mr. and Mrs. C. A. Parker and C. A. Parker, Jr., W. C. Titley, Mr. and Mrs. J. M. Walker.

Detroit, Mich.—J. J. Ross, Mr. and Mrs. G. W. Trout, C. O. Van Der Vort.

El Paso, Tex.—W. T. Davis

Galveston, Tex.—Mr. and Mrs. J. Matthews.

Gibson, Ind.—Mr. and Mrs. W. L. Connelly.

Houston, Tex.—Claude Mitchell.

Indianapolis, Ind.—M. B. Overly, C. S. Rhoads.

Kansas City, Mo.—Mr. and Mrs. J. F. Bratney, R. L. Logan, C. E. Marsh, Mr. and Mrs. Val B. Mintun and Miss Ruth Mintun.

Kankakee, Ill.—Mrs. H. E. Hewes.

Lafayette, Ind.—E. G. Stradling.

Lincoln, Neb.—Mr. and Mrs. H. A. Vaughan and son.

Louisville, Ky.—R. R. Hobbs.

North Bay, Ont.—Mr. and Mrs. J. W. Kelly.

Memphis, Tenn.—D. J. Kavanaugh.

Milwaukee, Wis.—A. C. Adams.

Minneapolis, Minn.—Mr. and Mrs. A. D. Bradley, Mr. and Mrs. I. B. Crissman, R. W. Kean, Mrs. Lee Kuempel, M. L. Lane, Mrs. Terry McCook, G. H. Merrill, Mrs. E. E. Merrill, G. D. Shepardson, H. A. Tuttle, H. K. Weld, Mr. and Mrs. A. Young.

Montreal, Que.—W. J. Camp, Mr. and Mrs. A. D. Smith.

New Haven, Conn.—C. E. Graham.

New York—C. G. Baird, Jos. C. Field, J. J. Ghegan, E. P. Griffith, J. B. Harlow, Mr. and Mrs. G. K. Heyer, J. C. Hubbard, Mr. and Mrs. B. A. Kaiser, Mr. and Mrs. E. C. Keenan, H. C. Law, Mr. and Mrs. W. W. Ryder and son Percy A. Ryder, T. R. Taltavall, Mr. and Mrs. A. D. Walters, Mrs. L. S. Wells, C. H. Wilson.

Norfolk, Va.—Mr. and Mrs. W. F. Williams.

Omaha, Neb.—W. P. McFarlane.

Passaic, N. J.—Mrs. E. P. Griffith, Miss G. M. Griffith, Miss A. M. Heuser.

Philadelphia, Pa.—I. C. Forshee.

Pittsburg, Pa.—Mr. and Mrs. G. A. Cellar, G. A. Dornberg, Mr. and Mrs. L. A. Lee and daughter, R. N. Phillips.

Portland, Ore.—Mr. and Mrs. E. A. Klippel, Jeff W. Hayes.

Roanoke, Va.—Mr. and Mrs. G. W. Jett, daughter and son.

San Francisco, Cal.—J. J. Monzingo.

South Bethlehem, Pa.—Mr. and Mrs. J. F. Caskey.

St. Louis, Mo.—Mr. and Mrs. E. A. Chenery, C. L. Matthews, Mr. and Mrs. W. Rogers.

St. Paul, Minn.—Geo. Boyce, Mr. and Mrs. M. H. Clapp and daughter, C. A. Crane, Mr. and Mrs. A. L. Frankenberger, O. C. Greene, J. C. Hardy, J. M. Hannaford, Dr. and Mrs. Peder A. Hoff, E. J. Little, Mr. and Mrs. J. C. Rankine.

Sudbury, Ont.—Mr. and Mrs. D. H. Bowen.

Syracuse, N. Y.—Mr. and Mrs. S. L. Van Akin, Jr.

Tacoma, Wash.—E. E. Dildine.

Topeka, Kan.—Mr. and Mrs. L. M. Jones and daughter.

Tyler, Tex.—Mr. and Mrs. W. J. Williams.

Vancouver, B. C.—Mr. and Mrs. R. N. Young.

Valparaiso, Ind.—Mr. and Mrs. G. M. Dodge.

Wilmington, N. C.—W. P. Cline.

Winnipeg, Man.—F. T. Caldwell, Mr. and Mrs. W. Marshall.

THE RAILROAD.

MR. R. H. CORSON has been advanced from the position of inspector of telegraphs of the Erie Railroad to the position of assistant to the superintendent of telegraph.

MR. W. T. DAVIS, whose appointment to be superintendent of telegraph of the El Paso and Southwestern Railroad Company, with headquarters at El Paso, Tex., was announced in our June 16 issue, is one of the younger members of the telegraph and railroad service. He was born at Fairmont, W. Va., January 30, 1878. He has filled the positions of messenger, operator and manager at Fairmont, W. Va.; chief operator, Colorado Springs; manager, Durango, Col.; cashier, superintendent's office, Denver; printer chief, Denver; chief clerk to division plant superintendent, Denver, and chief clerk to general manager, Denver. This wide experience in the various branches of the Western Union Telegraph Company's service qualifies him to fill the duties of his new position.

Railway Telegraph and Telephone Statistics.

Two reports of statistics of telegraph and telephone circuits on railways in the United States and Canada have been received since our issue of June 16 went to press.

Mr. J. C. Johnson, superintendent of telegraph, Pennsylvania Railroad Company, Philadelphia, Pa., reports as follows:

Number of miles telephone train dispatching circuits now operated or authorized, 5,353; number of miles telegraph train dispatching circuits now operated, 2,340; number of miles railroad now equipped or authorized for operation by telephone, 4,604; number of miles railroad equipped for operation by telegraph, 2,134; number of miles railroad equipped for operation by telephone or authorized between May 1, 1914, and May 1, 1915, 203; number of miles railroad previously operated by telegraph displaced by the foregoing, 200; number of miles railroad equipped for operation by telephone or authorized between May 1, 1915, and May 22, 1916, 1,254; number of miles railroad previously equipped for telegraph displaced by foregoing 1,295.

Mr. H. Hulatt, manager of telegraphs, Grand Trunk Railway System, Grand Trunk Pacific Railway, Grand Trunk Pacific Telegraph Company, Montreal, Que., reports as follows:

Grand Trunk Pacific—Metallic telephone train

dispatching circuits, 2,192 miles; grounded telephone train dispatching circuits, 460 miles; telegraph train dispatching circuits, 55 miles.

Canadian Government Railways, Transcontinental Division—Metallic telephone train dispatching circuits, 195 miles; grounded telephone train dispatching circuit, 465 miles; telegraph train dispatching circuits, 1,350 miles.

In the report for 1915, published in our issue of June 16, 1915, the total number of miles of telephone dispatching circuits on the Grand Trunk Pacific was 2,881, and the number of miles of telegraph dispatching circuits was 252. It thus appears that there was a reduction of 229 miles in telephone circuits and 197 in telegraph circuits.

There were no changes in the figures of the Grand Trunk Railway System.

Convention of Train Dispatchers.

The Train Dispatchers' Association of America held its convention at Toronto, Ont., June 20. Among the papers presented was one entitled "Time and the Train Dispatcher," by Frank M. McCabe, and one by P. E. Odell on "Transportation Efficiency."

"Train dispatchers, above all other classes of men," said Mr. McCabe, "are in a position to know the value of time." He advocated making the best use of time and preparing for higher positions.

Mr. Odell named a few of the important items that go to make up transportation expenses and the part played in them by the dispatchers.

OBITUARY.

Death of Professor S. P. Thompson.

Prof. Silvanus Phillips Thompson, aged sixty-six years, the widely-known English electrical engineer, author and physicist, and a former president of the Institution of Electrical Engineers, died in London, June 13.

Prof. Thompson was the author of several well-known works, including a life of Michael Faraday and "The Life of Lord Kelvin." He was also the author of "Elementary Lessons in Electricity and Magnetism," a widely used text book. This book had a remarkable success and was published in French, German, Italian and Polish, besides the English language, 100,000 copies having been printed.

His book "The Electromagnet" was translated into German, French and Russian. He was one of the British delegates to the Electrical Congress held in Chicago in 1893, where he read a paper on "Ocean Telephony," in which he propounded the idea of accelerating the speed of cabling by the use of inductive shunts at intervals along the cable.

He had the most complete electrical library of any in private hands.

Prof. Thompson, besides being one of the leaders in the electrical profession, was an artist of considerable note, his water-color paintings of Alpine scenery having been exhibited on various occasions.

Death of S. S. Garwood.

Sylvester S. Garwood, aged sixty-nine years, a well-known old-time telegrapher and one of the vice-presidents and most active members of the Telegraph and Telephone Life Insurance Association, and of other fraternal organizations, died at his home in Edgewater Park, N. J., June 24, after an illness of one week.

Mr. Garwood was born in Salem, Ohio, November 27, 1847, and entered the telegraph service at the age of fifteen years. He worked for various railroads and was subsequently manager for the Pacific and Atlantic Telegraph Company at Harrisburg, Pittsburgh and Chicago. In 1870 he was appointed superintendent of the Delaware River Telegraph Company at Wilkesbarre, Pa., and was afterward elected secretary and vice-president of the company. He held this position until the company was leased by the Western Union Telegraph Company. He then entered commercial business, but soon returned to the telegraph as superintendent of the Western Division for the Pacific and Atlantic Company at Chicago. In 1873 he entered the transfer office of the Western Union at Philadelphia and afterward was appointed transfer agent, holding that position until the consolidation of the Atlantic and Pacific and the Western Union. He was manager of branch Western Union offices in Philadelphia for a time and then became manager for the company in the same city.

Mr. Garwood severed his connection with the telegraph service in 1884 to engage in commercial business. Afterward he had charge of the contract department of the Philadelphia Bell Telephone Company and later became connected with some of Philadelphia's leading financial institutions. He took a very active part in the affairs of the Telegraph and Telephone Life Insurance Association and was always present at the meetings, where his advice was sought and highly valued by his associates. He was an officer of the association for thirty-two years and was a member of the executive committee at the time of his death. He was president of the Dot and Dash Club of Philadelphia and a member of the Old-Time Telegraphers and Historical Association, and a former president of the Ohio Society of Philadelphia and of the old Magnetic Club of Philadelphia.

The funeral was held at Edgewater Park June 27, and was attended by Messrs. W. H. Baker, C. P. Bruch and T. E. Fleming of New York, who represented the association. The association sent a wreath of carnations, these flowers being suggested by his wife because the carnation was her husband's favorite flower.

Deceased is survived by his wife, three sons and two daughters.

He had a large circle of friends in and out of the telegraph profession and personally he was a most charming man to know. He had exceptional business ability, a genial disposition and a lovable character, and was liked by all who knew him. He was always interested and active in fraternal and mutual organizations and was helpful to everybody.

Efficiency Engineering in the Telegraph Service.

(Continued from page 279, June 16.)

In our previous installment we pointed out the great advantage of the telegraph over the mail. Hundreds of pages of matter on this subject could be written, but our space is limited. We therefore find it necessary to omit many details, leaving that work to the wide awake managers to successfully solve the problem for themselves. There is a class of telegraph officials, however, who have to be shown everything, whether in the line of an argument or a concrete proposition. They take nothing for granted. For their benefit we will have to dig down into the subject a little deeper, so that they may receive all the benefit it is possible to give them in a pen picture on business getting. The telegraph as applied to modern business, one authority tells us, involves the use of the telegraphs instead of the mails in matters of negotiation, orders and offers. The telegraph speeds up business by the use of night letters or day letters, or in the regular daily fast service, both in the selling of goods and in the collection of delinquent accounts. The telegraph must not be regarded as an emergency proposition exclusively, however.

The business of the world is speeding up, being forced to it by changing conditions. All business concerns are in competition and must meet this speeding-up process and the telegraph is the most modern and efficient medium to accomplish this.

Many of the telegraph officials inform us that women are losing their fear of telegrams. It used to be that when a woman received a message by wire she would take it with a sinking heart and only muster up courage to open it after uttering a prayer that the news might not be so bad as she expected. This old-fashioned fear that any news coming to a home by wire must be bad news is not yet entirely dissipated. In fact, only recently on Mother's day, when thousands of telegrams of remembrance were sent home by absent, grownup children, a telegraph company found it advisable to provide special blanks, and to instruct every boy delivering such messages to announce to the recipient, "Madam, this is a Mother's day message." This fearful attitude, however, is rapidly passing away. The new generation of women welcomes the telegraph as a friend and helper. The telegram, originally only a harbinger of disaster or an instrument of imperative business, now has its kindly social and family uses. The night letter, sent in the evening and delivered next morning, with enough words for a real communication instead of the usual blunt ten, is chiefly responsible for the change. A few years ago there was no such thing as the night letter. Last year the telegraph companies carried many millions of them. They all took the place of letters.

While the night letter is an acknowledged convenience, we are informed by writers in newspapers that it has another side that is not altogether agreeable to the public. The following is from one of the Boston papers:

The telegraphic night letter at a low rate is un-

deniably useful and convenient, but like many other good things the abuse of it is not at all conducive to the public peace.

A letter in a New York newspaper the other day well illustrated the growing irritation at the mis-handling of the night letter. The writer thus described his experience:

"I returned home late last evening to find in my mail box a notice from a telegraph company that a telegram for me had been brought to the house at 9:38 a. m. and not delivered because I was not at home.

"I have a father and mother over seventy years of age, not very strong, and even a person of little imagination can picture fairly clearly what I went through mentally in the twenty minutes before I could get to the telegraph office."

There the man found that the telegram was simply an advertising dodge intended to sell him some tickets to a bazaar.

This inexcusable sort of thing was perpetrated by a prominent Progressive politician at the recent Massachusetts primaries. Many persons were disturbed in body and mind by the senseless messages, and some were even called out of church on account of them.

Many items similar to this have been sent to the writer of these efficiency articles. The telegraph companies will have to meet this situation, and the impression that a telegram is the conveyer of bad news must be changed. It will require time and patience to accomplish this, but the fact remains that it must be done.

(To be continued.)

The Associated Press.

A direct New York—Havana night leased wire service was started by The Associated Press June 1. Heretofore the service to the Havana papers was transmitted at the cable word rate. President Wilson sent his felicitations to President Menocal, of Cuba, on the occasion of the institution of the direct service.

A new "visible relay" table was recently installed in the New York office. It accommodates six operators and the necessary filing editors. It is similar to the one in use in Chicago, which has been found a vast improvement in the manner of handling expeditious matter. With the table an entire new equipment of the latest and most improved pattern of telegraph instruments was installed.

The following operators have been added to the Central Division traffic forces: P. B. Lanning, Atchison, Kan.; H. J. Sheldon, Aurora, Ill.; V. C. Snyder, Kalamazoo, Mich.; C. F. Brown and J. T. Carter, Dallas, Tex.; Earl Harmon, Kansas City, Mo.; Earl C. Grebe, Columbus, Ohio, and K. S. Risner, B. J. Thelen and Otto Dodt, Chicago.

Mr. F. H. Trickle, division traffic chief, Washington, D. C., recently underwent an operation from which he has recovered and has resumed his regular duties.

Subscribe for TELEGRAPH AND TELEPHONE AGE.

Handling of the Bridge Polar Duplex.

BY C. J. MC KEE, EAST LAS VEGAS, N. M.

(Continued from page 294, June 16.)

52. If you were in doubt as to whether your set was O. K., what would be a good method of trying it out?
53. How can you always tell at a glance whether an idle wire is closed and O. K.?
54. What is usually the cause of an open artificial line?
55. What is usually the cause of an open pole on a set just set up?
56. What should be done immediately after cleaning spare sets with furniture polish?
57. What does excessive current in the line do to load coils?
58. Why is it better to maintain a normal current with large battery taps reduced with non-inductive resistance, rather than using taps of proper size to give prescribed current without added resistance?
59. Under normal conditions what is the polarity of your closed pole?

2. Throw your artificial-line thousands lever to "open"—if set is connected to a leaky wire you will get a deflection depending upon the amount of leakage. If wire is clear, the needle will kick in the direction in which your battery switch is turned, when you close your key. If there be no line connected, the kick will be opposite to the direction in which your battery is turned. Disregard kick noticed upon opening your key.

3. Where you are using two or more sets as half-duplex repeater, you would use peg in cut-out on set where a wire fails. This connects the sending leg battery of this set direct to its own receiving leg so that its control relay being open, does not open whatever is connected to the receiving leg.

4. It should not be used when working full duplex as it would kill the receiving leg on set used.

5. If too heavy it could be caused by:

- (a) Incoming signals arriving too heavy.
- (b) Control relay on incoming side being adjusted too low. (Applies to half repeater only.)

WHEN WORKING	To make incoming signals	
	HEAVIER	LIGHTER
FULL DUPLEX ...	Move forward keeper towards armature.	Move back keeper towards armature.
HALF DUPLEX .. (Upset)	Increase resistance in artificial line and move back keeper towards armature if point switch is to left—forward keeper, if to right.	Decrease resistance in artificial line and move forward keeper towards armature if point switch is to left—back keeper, if to right.
HALF DUPLEX .. (Regular)	Decrease resistance in artificial line and move forward keeper towards armature if point switch is to right—back keeper, if to left.	Increase resistance in artificial line and move back keeper towards armature if point switch is to right—front keeper, if to left.

NOTE: Changing resistance as above has just the opposite effect on outgoing signals

TABLE A—SHOWING HOW TO CHANGE CHARACTER OF SIGNALS.

60. What is the composite switch used for?
61. If repeating sounder contacts failed to break, what would it do?
62. Stand before a duplex set and follow the course of the sending leg of full duplex; of half duplex.
63. In the same manner describe the receiving leg of a full duplex; of a half set.
64. In the same manner follow the local contact circuit of pole changing relay.
65. In same manner follow the local contact circuit of the control relay.
66. In same manner follow the circuit of the pole changing relay armature.
67. How would you make your sender's signals heavier to distant end by biasing?
68. How would your set act if the distant end had his grounding switch on ground?
69. If distant end artificial line went open, how would it affect your end?
70. If the wire failed on a terminal half set, how would you let any subscriber connected thereto know that you were after it, or talk to them?
71. How would you tell quickly whether your repeating sounder contacts were breaking O. K.?
72. Supposing one bank of your Morse battery failed, what would you do?
73. What would happen if your point reversing switch stood so that it made contact with both of its points?
74. How would you tell the approximate current flowing in line from your millammeter?

ANSWERS TO QUESTIONS ON BRIDGE POLAR DUPLEX.

1. Mil-ammeter will not be affected when you throw grounding switch to ground.

- (c) Pole-changing relay on outgoing side adjusted too low.
- (d) Contacts on pole-changing relay on outgoing side being close enough to arc.
- (e) Artificial line out of balance.
- (f) Excessive current in "dummy" of half repeater, in sending leg of full duplex, or in receiving leg of half set.

If too light, it could be just the opposite of above.

6. It will tend to stick, sound heavy, or close down to distant end, depending upon strength of arc.

7. By biasing as shown in Table A.

8. If, upon closing your key, the mil-ammeter needle moves in direction your battery reversing switch is turned, it indicates too much resistance in artificial line. If it moves opposite to direction of your battery switch, it indicates not enough resistance. In making this test disregard a kick of needle, going only by where it finally comes to rest.

9. After getting a balance as in No. 8, you will get a kick upon closing your key, if this kick is in the direction in which your battery reversing switch is turned, it indicates not enough capacity in your artificial line. A kick opposite to your battery switch indicates too much capacity. Disregard kick noticed upon opening your key.

10. You will get a deflection opposite to direction in which your battery reversing switch is turned and needle will reverse from one side to the other—same value in both directions—when you open and close your key.

11. You will get a deflection in direction in which your battery reversing switch is turned and needle will reverse as with an open when you open and close your key.

(To be continued.)

Railway Telegraph and Telephone Appliance Association.

The Railway Telegraph and Telephone Appliance Association held a meeting at the Hotel St. Paul, St. Paul, Minn., June 22, and elected the following officers:

A. D. Walters, chairman; G. A. Graber, vice-chairman; B. A. Kaiser, chairman of the entertainment committee (re-elected); Arthur Lockwood, secretary and treasurer, and H. G. Thompson, Val B. Mintun and G. K. Heyer, members of the executive committee.

Telegraph and Telephone Development in Alaska.

The Alaskan Engineering Commission, engaged in building a government railroad to interior Alaska, has organized a telegraph and telephone department with headquarters at Anchorage, Alaska. Mr. E. R. McFarland is the superintendent of telegraph and telephone.

This department includes construction, maintenance and operation of telegraph and telephone lines, townsite telephone exchanges and radio plants. Regular day, night, night letter and press service has been established. Connection with the United States is made at Seward, Alaska, thence via the government cable to Seattle, Wash.

DAYLIGHT EXTENSION.—The clocks in France, Bosnia, Herzegovina and Algeria have been advanced one hour. This makes the time in France and Algeria six hours ahead of eastern standard time, and seven hours ahead in the other two countries. Legal time is advanced one hour in Portugal, making it five hours and twenty-four minutes ahead of eastern time.

THE TELEGRAPH AND TELEPHONE LIFE INSURANCE ASSOCIATION has levied assessment 605 on account of the deaths of J. A. Townsend at Winchester, Mass.; C. H. Seymour, East Orange, N. J.; W. H. Steigelmaier, Canandaigua, N. Y.; J. J. Fallon, Helena, Mont.; G. I. Stangeway, New York; E. T. Gray, West Somerville, Mass., and E. S. Greene, New York.

A Book of Value.

Every operator who wishes to get away from the operating desk should post himself on the higher telegraph work, and there is nothing better to study than "Pocket Edition of Diagrams and Complete Information for Telegraph Engineers and Students," by Willis H. Jones. It explains clearly the equipment of a modern telegraph office, and everything that a telegraph engineer or student should know to fill higher positions. The book is written in an easy, conversational style, and is interesting as well as instructive. The price of the work is \$2.00 per copy. Send orders to TELEGRAPH AND TELEPHONE AGE, 253 Broadway, New York.

A Technical Education in Telegraphy.

An easy way to acquire a thorough-going technical knowledge of telegraphy is the study of "Correspondence School Lessons in Elementary Telegraphy" by J. H. Penman. This book tells all about elec-

tricity in its application to the telegraph and in such an easy way that the study of it becomes a pleasure.

The book covers these subjects: The mathematics of telegraphy; potential, current, resistance; gravity battery; derived circuits; arrangement of batteries; magnetism; self-induction; the induction coil; the relay; the sounder; the key; Morse circuit; grounds; switches; line leakage; static induction; testing; testing instruments, etc.

This book is for sale by TELEGRAPH AND TELEPHONE AGE, 253 Broadway, New York. Price \$2.00 per copy.

PHILLIPS' CODE.—No progressive telegrapher should be without a copy of Phillips' Code, which is a time-tried system of telegraphic short hand. It is used very extensively in the United States by all press associations and telegraph operators, and a knowledge of the abbreviations, which is very easy to acquire, enables one to report the proceedings of meetings, speeches, etc., besides its use on the wire. Price, \$1.00 per copy. For sale by TELEGRAPH AND TELEPHONE AGE, 253 Broadway, New York.

INDUSTRIAL.

THE HALL SWITCH & SIGNAL COMPANY was represented at the St. Paul Convention of the Association of Railway Telegraph Superintendents by Mr. D. R. Day of the Chicago office.

THE ADVERTISING DEPARTMENT of the Western Electric Company is now located in the Telephone and Telegraph Building, 195 Broadway, New York. This great building will evidently be the headquarters of telegraph, telephone and other electrical industries, and they are moving in as rapidly as the various offices are made ready.

THE RAILWAY ELECTRIC MANUFACTURING COMPANY has moved from Chicago to 250 and 252 West Water Street, Milwaukee, Wis., where it has larger and better facilities for the manufacture of the well-known "Remco" selective train dispatching equipment. The company also manufactures a line of jack boxes, telephone arms, etc. These selectors are giving excellent service wherever they are used, at 100% efficiency.

LETTERS FROM OUR AGENTS.

NEW YORK POSTAL.

The mobilization of the various National Guard units created a large volume of additional telegraphic traffic. The wires are also carrying a great deal of press matter pertaining to the Mexican situation. Politics and the European war have suddenly ceased to be the chief topics of discussion where operators gather, and Mexico now has the center of the stage with the spotlight turned on full.

Miss Mae A. Williams, a printer operator, died Saturday, June 17, following an operation for appendicitis. The funeral was held from her late residence, Brooklyn, N. Y., on Tuesday, June 20.

The sympathy of the force is being extended to Harry Trotsky, of the Detroit bonus circuit, on the death of his young daughter.

Miss Josephine T. Schneider, for over five years a clerk in the efficiency department, was married at Flushing, L. I., on June 28 to W. C. Michener, an operator employed in this office. Immediately after the wedding the young couple left for a honeymoon trip to Portland, Maine. They will reside in Flushing, L. I.

A daughter arrived recently to gladden the home of assistant chief operator R. M. Telschow.

Among those recently appointed to the operating force are F. P. Laxton, J. B. Martin, J. H. Cobb and J. P. Conklin. Those who resigned were F. R. Tracey, R. S. Chilcote, E. P. Goodwin, J. E. McCarter, S. F. Miles, A. L. Mefford, V. V. Hedgecock and Mrs. K. M. Schofield.

NEW YORK WESTERN UNION.

J. P. Edwards, division traffic superintendent, has returned from a visit to Atlanta, Ga. Mr. Edwards has now become a permanent resident of the metropolis, having brought his family with him from Atlanta.

M. J. Hayden, district commercial manager, Brooklyn, and L. C. Boochever, division traffic supervisor, New York, have made a tour of the large offices on Long Island in the interest of providing additional facilities for the heavy files anticipated during the coming season.

John R. Palmer, division inspector, New York, had a daughter, who will be christened Edna Louise, born to him June 17. Mr. Palmer is a brother of G. E. Palmer, chief operator of the operating department, and a son of J. E. Palmer of Pittsburgh, a veteran manager.

The operators from this office who assisted in the work at Chicago and St. Louis during the recent national conventions were: G. A. Zimmerman, H. F. Tyler, A. J. McGivern, A. J. Davis, C. H. DeBaun, H. W. Lennon, W. Woodloch, J. Heisner, J. E. Clements, M. Leibman and J. T. Wood. They report having a very excellent time interspersed with hard work.

Miss Minnie Blohm, operator in the trunk division, was married to Cornelius J. L. Lynch June 7. They will reside in Rockville Centre, L. I.

Henry S. Keefe, who graduated with high honors and the degree of B. A. from Seton Hall College, South Orange, N. J., on June 14, is the son of J. J. Keefe, an old-time operator of this office.

WASHINGTON, D. C., WESTERN UNION.

On June 5 the Western Union Educational Society was formed and the following officers elected for the ensuing year: President, Edward R. Kidwell; first vice-president, Miss A. Vierkorn; secretary and treasurer, Bernard Rusk. The society's first outing was held June 21. The steamer "Charles Macalester" carried about 150 employes down the Potomac and a most enjoyable day was spent.

CHICAGO WESTERN UNION.

Mr. F. B. TRAVIS, who recently resigned from the Postal Telegraph-Cable Company as chief operator at Boston, has entered the service of the Western Union Telegraph Company at Chicago as commercial agent. Mr. Travis' departure from the East is regretted by a wide circle of telegraph and newspaper friends.

James P. Latham, aged sixty-five years, an old-

time operator employed in the Toledo, Ohio, Chicago and other offices of this company, died at Burlington, Iowa, June 12.

Patrick O'Connor, a veteran operator of the Indiana Division, made a good average one morning between 7 a. m. and 8 a. m. of fifty-six messages equated on the Elkhart, Ind., wire.

J. S. Strickler, of this office, is installing new equipment in the Logansport, Ind., office of this company.

NORFOLK WESTERN UNION.

H. E. White, for over twenty years identified with the Norfolk, Va., office of this company, has found it necessary to take a six months' leave of absence, which he will spend in the mountains of Virginia for the benefit of his health. The best wishes of his friends go with him.

Philadelphia Postal Outing.

The third annual field day of the Postal Telegraph Employees' Athletic Association was held June 24 at Woodside Park, Philadelphia, and attracted a crowd of nearly 3,000 members and friends of the organization. Ten events were decided over the quarter-mile cinder track and keen competition resulted in the struggle for the interdepartment championship trophy, which was won by the Delivery Department with a point score of 44. The Operating Department was second with 42 points and the Commercial third with 19.

After the last event the prizes were presented to the various winners and during the evening the members of the employes' families spent their time on the many amusement devices at the park. The fine weather which continued throughout the day was responsible for the big turnout, which established a record for the association. Many out-of-town Postal guests were present.

Much credit for the success is given to the general committee, which consisted of E. M. Price, chairman; David Logan, secretary; J. J. Hardy, treasurer; C. F. Meyers, J. A. Jeffries, P. J. Reilly, Jr., W. G. Kurtz, A. G. Carpenter, J. B. McKeegan, C. H. Krewson, J. Blank, W. Miley, H. Riskie, R. L. Massey, W. M. Phillips, J. H. Lieberman, E. W. Miller.

Reception Committee: C. E. Bagley, E. W. Miller, C. F. Meyers, R. C. Mecredy, J. H. Wilson, J. A. McNichol, E. H. Locke, C. E. Stump, M. N. Redding.

Baseball Committee: C. H. Krewson, chairman; W. G. Kurtz, E. W. Miller, D. Logan, E. M. Price.

Track Officials: Chairman, E. M. Price; Referee, E. W. Miller.

Judges, J. H. Wilson, R. C. Mecredy, C. E. Bagley. Timers, J. B. McKeegan, C. F. Myers, R. L. Massey. Director of runners, W. Miley. Starter, D. Logan. Linesmen, H. Riskie, J. A. Jeffries. Announcer, W. M. Phillips. Official physician, Dr. J. P. Lenahan.

The electrical effects and the athletic paraphernalia were in charge of Alfred G. Carpenter.

The summaries are as follows:

100-Yard Dash, Open—First, L. Heisley; second, Harry Lit; third, J. J. Hardy. Time 11 seconds.

100-Yard Dash, Messengers—First, D. A. Sorokin; second, A. Streiper; third, J. Merza. Time 10 3/5 seconds.

50-Yard Dash, Open—First V. J. Feola; second, Harry Lit; third, tie between W. G. Kurtz and C. Krewson. Time 8 2/5 seconds.

75-Yard Dash, Women—First, Jeanette Rogers; second, Martha Haines; third, Wilhelmina Bowne. Time 10 1/5 seconds.

50-Yard Sack Race, Open—First, V. J. Feola; second, J. Merza; third, W. G. Kurtz. Time 9 seconds.

50-Yard Dash, Messengers—First, D. A. Sorokin; second, A. Streiker; third, J. A. Merza. Time 8 2/5 seconds.

Potato Race, Open—First, R. Keyes; second, V. J. Feola; third, J. A. Merza. Time 2:30 2/5 seconds.

150-Yard Obstacle Race, Open—First, Harry Lit; second, R. Keyser; third, J. A. Merza. Time 48 2/5 seconds.

Running Broad Jump—First, V. J. Feola, distance 30 feet, 10 inches; second, R. Keyes, distance 13 feet; third, W. J. Kurtz, distance 12 feet 3 inches.

One Mile Relay—First, Operating Department, team composed of Sutcliffe, Leininger, Lenihan and Kurtz; second, Commercial Department, team composed of Feola, McMahan, Lit and Keyes; third, Delivery Department, team composed of Sorokin, Streiper, Merza and Watkins. Time 4:58 4/5.

PHILADELPHIA POSTAL.

Among the new names added to our roll are C. Y. Goolsby, W. L. Gardner, C. H. Faulkner, I. A. Davis, D. L. Cooper, W. F. Shade and J. W. Kelley.

Miss E. M. Farrel of this office has been assigned to Atlantic City during the busy season there.

F. H. Hoefling, manager Broad Street Station office, has been assigned in charge of the State Mobilization Camp office at Mt. Gretna, Pa. O. C. Balmer relieves Mr. Hoefling during this period.

Appointments—Frank K. Holtzinger has been appointed all night chief operator; W. Earl Kauffman, night wire chief.

Richard H. Snape, manager Real Estate Trust office has been appointed manager at 49 South Third Street. Miss Gertrude E. Keefe succeeds Mr. Snape. A. J. Holzapfel has been appointed manager West Philadelphia Stock Yards, vice J. H. Ryan, transferred to the main office.

K. L. Vernon has been added to the Philadelphia plant force.

Operator J. Inselman of this office was married on June 18 to Miss Sarah Newmann. The entire force extend their best wishes. The young couple are spending their honeymoon at Buffalo and Niagara Falls.

Harry Thompson has returned to duty after an illness of seven weeks. Mr. Thompson is one of the first telegraph operators in Philadelphia for the Postal.

Chief clerk J. J. Hardy has returned from a business trip through Schuylkill County.

Miss C. J. R. Williams, of Chicago, was a recent visitor here on her way to Atlantic City.

John A. Sullivan, Jr., son of J. A. Sullivan of this office, is attached to Troop "I," Third Infantry, now stationed in Texas.

Since moving to our new headquarters it has been necessary to enlarge our burglar alarm switchboard, making additional room for fifty-two new burglar alarms.

The mother of operator Leo Miller, of the Commercial Exchange, died June 20.

PHILADELPHIA WESTERN UNION.

Forty-eight employes of this company organized the Western Union Educational Society of Philadelphia on June 16 by electing the following officers: President, Mahlon G. Moyer; first vice-president, Miss Selma Snyder; second vice-president, John V. Berger; secretary and treasurer, John T. McCoy; executive committee, Messrs. Hal R. Swann, Harry H. Peck, W. C. Shugar; meetings and publication committees, Miss C. Grimley, J. A. Bailey, Miss F. Schott, Miss B. Williams and J. F. O'Neil.

ROCHESTER, N. Y., WESTERN UNION.

Miss Ida L. Stickles, for nearly ten years an operator in this office, resigned June 10 and was quietly married to W. L. Kester of this city Monday, June 12.

H. M. Kelly, formerly of the New York operating department, has accepted a position in this office.

BALTIMORE WESTERN UNION.

A Western Union Educational Society was organized by traffic employes on June 15. W. E. Stimpson, division traffic supervisor, gave an interesting talk and was unanimously elected an honorary member. The following officers were elected for coming season: President, G. A. Hammond; first vice-president, M. L. Mosley; second vice-president, Miss Lillian S. Single; secretary and treasurer, C. A. Carrick.

J. Wallace Hyman, operator for a Chicago grain firm, died suddenly of heart disease on the floor of the exchange in this city June 9.

TOPEKA, KAN., WESTERN UNION.

W. C. Carswell, manager of this office and a prominent member of the Rotary Club of Topeka, has been appointed chairman of the telegraph section of the National Association of Rotary Clubs, which body will hold its convention at Cincinnati, Ohio, July 16 to 21. This appointment is an unusual and distinct honor and reflects much credit on Mr. Carswell's ability and leadership.

POUGHKEEPSIE, N. Y., WESTERN UNION.

Geo. F. Card, manager of this office, received many compliments in the local papers for the able manner in which he handled the large volume of race matter during the intercollegiate boat races, which took place on June 17.

J. E. Mendelsohn of New York was in charge of the movement of through traffic and T. J. Meade, assistant superintendent, New York, looked after the commercial interests. It required the services of about forty operators to handle the heavy file of matter.

ST. LOUIS WESTERN UNION.

During the National Democratic convention here June 14, 15 and 16, Mr. W. N. Fashbaugh, vice-president and executive head of the traffic department, New York; T. W. Carroll, general traffic superintendent of the Western Division; M. B. Wyrick, division plant superintendent, and W. S. Woods, of the plant department, Chicago, and a force of fifty or sixty telegraph operators from Chicago and other cities, were here to help in handling the special press work of the convention.

The annual moonlight excursion of the Western Union Electrical Society was held Tuesday evening, June 20, on the Steamer "Alton." The boat left the wharf at 8:30 p. m., returning about midnight. The evening was ideal for the trip and the 500 or more members and their families and friends enjoyed it very much. Among the local officials present were W. J. Armstrong, district traffic superintendent; G. R. Alger, chief operator; A. C. Cronkhite, district commercial superintendent, and his wife, and C. W. Mitchell, manager. Mr. Cronkhite and wife and Messrs. Armstrong and Mitchell acted as a reception committee. Every lady was given flowers and every gentleman a cigar as they entered the cabin deck.

TOLEDO WESTERN UNION.

William H. Thompson has been placed on the pension list after serving this company for nearly fifty years. His first service was as lineman at Muir, Mich. He is now seventy-three years of age and is a remarkably well-preserved man. He is a veteran of the Civil War.

LOS ANGELES WESTERN UNION.

D. F. Ingold, who recently returned from San Francisco to reassume the chief operatorship of

this office, found on his desk when he entered the operating room a basket of flowers with a card of welcome attached. In our previous issue we mentioned the conditions under which Mr. Ingold left San Francisco. Many officials are welcome no matter where they locate. Mr. Ingold is one of this class. The interests of employer and employe are handled with a degree of exactness and justice that makes Mr. Ingold popular wherever duty calls him.

BUFFALO WESTERN UNION.

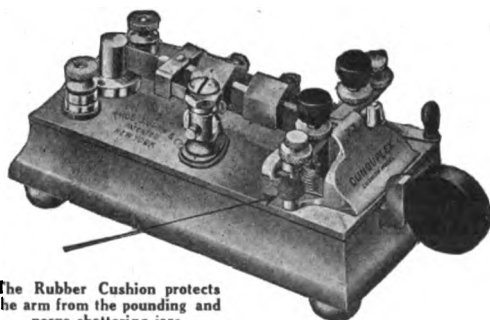
Miss Rosalie C. Geraci, twenty-one years of age, and a former telephone recorder in this office, has earned the distinction of being the first Italian woman chemist in the United States. Miss Geraci was one of the most efficient members of the Buffalo Western Union telephone force and earned her way through college. She was awarded the degree of Bachelor of Chemistry and was the only woman in the class to receive this high distinction.

BOSTON WESTERN UNION.

On June 4, W. E. Martin, night chief operator, met with a very painful accident, laying him up for several days. The entire force, without a single exception, hailed his return at the end of the week with genuine delight.

WANTED—The address of Woodruff Lee, a telegraph operator, who was some years ago with the Western Union. His mother recently died, leaving a small estate to be divided and his signature is needed to the legal documents. Address Wanted, care Telegraph and Telephone Age, 253 Broadway, New York.

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The Rubber Cushion protects the arm from the pounding and nerve-shattering jabs.

We beg to announce our new Dunduplex Cushion Device. The first time that this method of preventing nervous strain has been embodied in a telegraph key.

The Dunn Shock Absorber eliminates metal-to-metal contact with the aid of a rubber cushion stop that absorbs the jolts, thus minimizing injury to the nerves. It also provides a featherweight touch that lightens the work, and is not a drag on the operator's energy, thereby lengthening the life of his grip.

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Telephone Building, 24 Walker Street, Room 1129, Daily
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Saturdays 1 p. m.

Rubber Telegraph Key Knobs.

No operator who has had to use a hard key knob continuously should fail to possess one of these flexible rubber key caps, which fits snugly over the hard rubber key knob, forming an air cushion. They render the touch smooth and the manipulation of the key much easier. Price, fifteen cents. J. B. Taltavall, TELEGRAPH AND TELEPHONE AGE, 253 Broadway, New York.

ASSOCIATIONS AND ORGANIZATIONS.

The Old Time Telegraphers and Historical Association, Andrew Carnegie, president; F. J. Scherrer, secretary, 30 Church St., New York. All Old Time Telegraphers who are eligible for membership are requested to send for application blanks. The next reunion will take place in New York City, September 26, 27 and 28.

Association of Railway Telegraph Superintendents, M. H. Clapp, president; P. W. Drew, 112 West Adams Street, Chicago, secretary and treasurer. Annual meeting, Washington, D. C., September 18, 1917.

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717 Railway Exchange, Chicago

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Advertisements will be accepted, for this department of the paper, at the rate of five cents per word.

Post office or express money orders, checks or drafts may be made payable to Telegraph and Telephone Age when ordering goods advertised in the classified columns. They will be endorsed and turned over to the proper party when the goods have been shipped to those ordering.

Our Subscription Department

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For Sale—One Queen and Company, Philadelphia Round Pattern Ammeter, 0-10; price \$12, cost \$20. Address Ammeter, c/o Telegraph and Telephone Age, 253 Broadway, New York.

FOR SALE—A number 6 Remington Typewriter, second-hand, guaranteed to be in perfect condition. To be sold at a sacrifice; price, \$18.00. Address Typewriter, c/o Telegraph and Telephone Age, 253 Broadway, New York.

FOR SALE—Underwood Visible Typewriter in perfect condition, thoroughly guaranteed; price, \$35. Address Underwood, c/o Telegraph and Telephone Age, 253 Broadway, New York.

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References: O. STRUBEL, Esq., Engineer Mex. Tel. Co., N. Y.
J. G. MURRAY, Esq., Electrician C. & S. A. Tel. Co., N. Y.

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"Mr. E. F. Wach our representative at Chicago in six weeks secured seventy applications for membership and has fifty more ready to close. He expects to obtain three hundred new members during the coming year."

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No doubt you are aware that TELEGRAPH AND TELEPHONE AGE is the only publication in this country devoted exclusively to the interests of the telegraphs, the telephones, wireless telegraphs and submarine cables. In the pages of this magazine are recorded the activities of the different societies, associations, clubs, etc., both social and official, connected with the various companies.

Our correspondents and agents all over the United States and Canada and throughout the world secure for us the facts of all the important events connected with these industries, so that we are enabled to present them to our readers in a clear and concise manner.

The value of the magazine does not end here, however. We have special articles for the thinker; those who wish to advance themselves in their respective line of employment.

The following partial list of contents gives a slight idea of the advantages to be gained by a subscription to this paper. These items appeared in the year 1915. They were carefully prepared by writers of acknowledged ability, and are scientifically correct:

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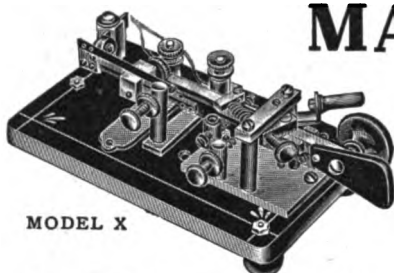
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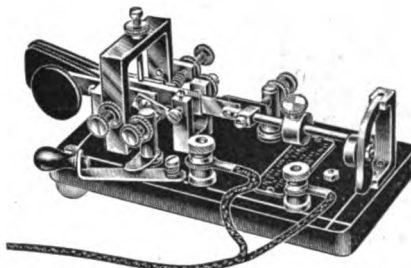


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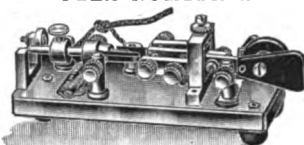


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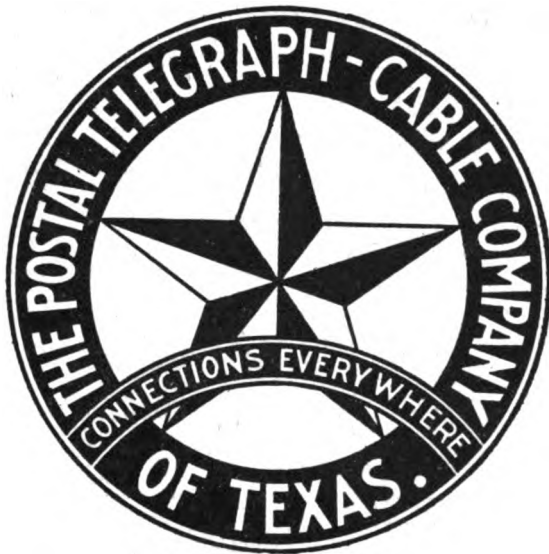
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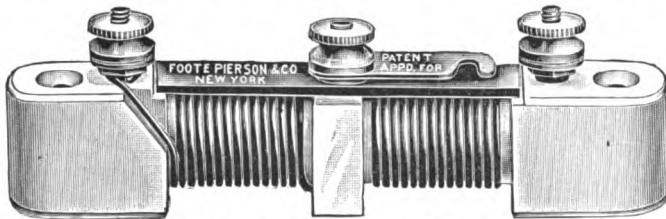
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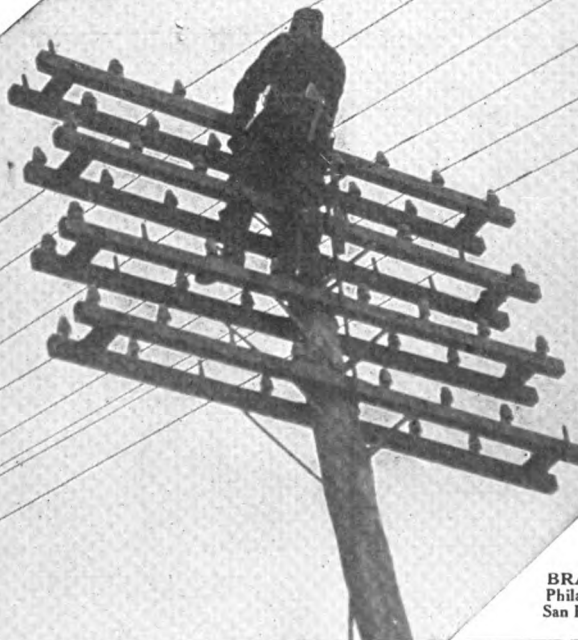
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CONTENTS.

Why Should the Government Infringe Patents? Loyalty.....	379
Telegraph and Telephone Patents. Stock Quotations. Personal.	
Postal Executive Office Notes.....	380
Western Union Executive Office Notes.....	381
Conference at Franklin, Pa. S. B. Haig, Division Traffic Superintendent, New York. J. P. Edwards, Division Traffic Superintendent, Chicago.....	382
F. J. Farrell, Jr., Dallas, Tex. The Cable. Canadian Notes.	
The Dominion Telegraph Company.....	383
The Telephone. Radio Telegraphy.....	384
Obituary. Municipal Electricians. Programme of Baltimore Convention.....	385
Side Lights on Success, By H. J. Pettengill.....	386
Answers to Questions. New Idea in Vacations.....	387
Why Operator Hamm Reported Late, By R. M. Telschow. No Redress for Errors.....	388
Marconi Company Sues United States for One Million Dollars.....	389
Handling of the Bridge Polar Duplex, By C. J. McKee, (Concluded).....	390
The Railroad. G. D. Hood, Superintendent of Telegraph, Rock Island System. Officers of Association of Railway Telegraph Superintendents. Boston Educational Society Outing.....	393
Construction and Maintenance of Outside Plant.....	394
Good Reading, By J. V. Riddick.....	395
Grounds and Ground Wires.....	396
The "Erie Short Cut" Again. A Modification of the Varley Loop Test, By Harry V. Lewis.....	397
Efficiency Engineering in the Telegraph Service (Continued).....	398
Telegraph Code of Ethics. Census of Electrical Machinery Industry.....	399
The Associated Press. Wall Street Gossip. Change of Meeting Place of Old Timers' Reunion. Industrial—Reclamation-of-Land Contest. Letters From Our Agents.....	400

Why Should the Government Infringe Patents?

The suit of the Marconi Wireless Telegraph Company of America against the United States, through the court of claims, for infringement and use of certain wireless patents will no doubt attract much attention.

Infringement of patents and use of the same on the part of the government has been the subject of much discussion and complaint in the past and the decision in this case will determine how far the government may indulge its infringing proclivities to the detriment of the interests of private individuals and public service corporations.

It is an anomaly for the government to issue a patent and then turn right round and infringe the patent, without offering any compensation or redress for the violation. The concerns purchasing patents for development are placed at a great disadvantage by such practices because it encourages violation of patent rights all around. Manufacturers of apparatus on government specifications seem to be protected because they have the government behind them, and this sort of legalized infringement is going on much of the time, while the owners of the patents infringed have been compelled to sit by and see their legitimate business taken away from them. The whole thing resolves itself into the question as to the value of a patent. In a patent the government gives the inventor an exclusive right to the use of his invention, but gives him no protection whatever against infringement; in fact it becomes an infringer itself if it is found expedient or convenient.

The government should pay damages as do private interests when an injury is committed. The result of the present case will be watched with much interest by all concerned.

Loyalty

Is there any less loyalty among telegraph employees than among telephone employees?, is a question that was brought up in an article printed in a recent issue, in which a correspondent asserts that from his observation the telegraph service suffers in this respect compared with the telephone. It is a rather broad assertion to make and there are very many telegraph people who will not agree to it.

One of the reasons given for this supposed state of affairs is the attitude of the telephone officials toward their subordinates, both of which classes become better acquainted with one another by reason of their free and unhampered means of direct communication. "For instance," says the correspondent, "if a plant superintendent desires to correct an error in the management of one of the local exchanges he simply places a long distance call and in two or three minutes he has the district manager on the line. Instructions and explanations follow and the matter is adjusted to the satisfaction of both. On the other hand, the telegraph official would probably send his manager a sharp telegram and, in the majority of cases cause that individual to nurse a 'grouch' for some time, with no adequate means of getting it out of his system. There is no practical way of changing this condition."

There is no doubt of the fact that instructions transmitted by telephone from telephone officials to their subordinates tend to produce harmonious compliance, and that this means of communication is promotive of respect and agreeable relations, but that does not prove anything against the tele-

graph. Where orders and instructions are transmitted largely by mail, as is the case in the telegraph service, there may be instances where irritating language is employed. Such utterances hardly belong to official correspondence; they merely reflect the idiosyncracies of individual character. They would not be tolerated over the telephone, neither would they be if the instructions were transmitted by telegraph, so why should they be in a letter?

We have in mind a case of two prominent telegraph officials one occupying a position superior to that of the other. In the course of events the latter became the former's superior and it came out in a discussion afterwards that "saucy" letters frequently passed between them. They were both loyal to their company, however; their unrestrained language was simply a habit they had fallen into.

Among the operating staffs of the telegraph companies we have found that loyalty is the rule and we do not believe that telephone employes are any superior to telegraph employes in this regard. Telephone interests and activities are more advertised than are those of the telegraph and that perhaps is one of the reasons why a person might be led into the belief that the telephone employes are more loyal than are telegraphers. All things being equal, we do not think they are. There is every reason why telegraphers of the present day should be loyal and none why they should not be.

Telegraph and Telephone Patents.

ISSUED JULY 11.

1,190,588. Relay. To W. E. Rogers, Trenton, Mich.

1,190,625. Telegraph Key. To W. A. Boyd, Brooklyn, N. Y.

ISSUED JULY 18.

1,190,973. Transmitting Means for Wireless Telegraphy. To C. M. Agner, Sacramento, Cal.

1,191,152. Automatic Trunk Selector. To A. M. Bullard, New York.

1,191,167. Relay. To J. Erickson, Chicago, Ill.

1,191,210. Telephone Intercommunicating and Supervisory System. To T. G. Martin, Chicago, Ill.

1,191,265. Telephone Exchange System. J. L. Wright, Cleveland, Ohio.

1,191,507. Attachment for Telephone Mouthpiece. To J. A. Hall, San Diego, Cal.

1,191,917. Telephone Trunking and Supervisory System. To W. L. Campbell, Chicago, Ill.

ISSUED JULY 25.

1,192,007. Telephone System. To Frank M. Slough, Elyria, Ohio.

1,192,126. Wireless Telegraph Transmitter. To Archibald Shaw, Randwick near Sydney, New South Wales, Australia.

Stock Quotations.

Following are the New York closing quotations of telegraph and telephone stocks on August 10: American Telephone and Telegraph Co. 130¾ Mackay Companies 82

Mackay Companies, preferred 67—68½
Marconi Wireless Tel. Co. of Am. (Par value, \$5.00) 3½
Western Union 94

PERSONAL.

MR. HARRY O. RUGH of the Teletigraph Company, Chicago, Ill., was a New York visitor last week.

MESSRS. ADOLFO CONCHA, telegraph inspector in Colombia, and Saturno Zapata, chief of inspection, Bogota, have been appointed to visit the United States for the purpose of selecting some needed telegraph material.

MR. JAMES GORDON BENNETT of Paris, France, proprietor of the *New York Herald*, is in the city. One of the objects of his visit to New York at this time is the selection of a new location for the *Herald* plant. The lease on the present site will soon expire.

MR. JEFF W. HAYES, has returned to his home in Portland, Ore., after a trip covering several months and extending throughout the country, in the interests of his new book "Autographs and Memoirs of the Telegraph." He reports having had a very successful and pleasant trip.

Condenser Charges and Capacities.

Condenser charges and capacities can be readily compared with a good voltmeter. With a given condenser the swing of the needle is nearly proportional to the amount of the charge, and it can be readily shown, for example, that 220 volts will impart twice as heavy a charge to a 2 mf. condenser as will 110 volts. Since with a given potential difference the volume of the charge is proportional to the capacity the capacities of two condensers can be compared by charging or discharging them through a voltmeter.

POSTAL TELEGRAPH-CABLE CO.

EXECUTIVE OFFICES.

MR. EDWARD REYNOLDS, vice-president and general manager, is at Lake George. He will return to his office August 21.

MR. C. P. BRUCH, vice-president, will start on his vacation August 28.

MR. G. H. USHER, general superintendent of the Southern Division, has returned to Atlanta from a week's trip through the first district, visiting Richmond, Va., Charlotte and Raleigh, N. C., and other offices. Mr. Usher reports that July was a particularly strenuous month for the Southern Division staff by reason of the tropical storm of July 5, which prostrated all wires along the Gulf coast from New Orleans to Pensacola. This was followed on July 15 by unprecedented rains and floods in the Atlantic coast states, causing great damage to telegraph lines, especially in North and South Carolina.

MR. MINOR M. DAVIS, electrical engineer, New York, is at Cape Cod, Mass., where he will remain until September 1.

MR. J. F. SKIRROW, associate electrical engineer, New York, has returned to his office after a few weeks' rest at Cape Cod, Mass.

MR. J. F. HEARD, division electrical engineer, Atlanta, Ga., has just returned from an inspection trip covering Virginia, North and South Carolina.

MR. J. A. FOREHAND, superintendent at Seattle, Wash., has returned to his office after a trip of inspection of lines and offices in his district.

MR. D. C. DELANY of the Postal Telegraph-Cable Company, Atlanta, Ga., was a recent New York visitor. His trip north included stops at Atlantic City, Buffalo and Niagara Falls in addition to New York. Mr. DeLany is a member of the Yaarab Shrine Patrol of Atlanta.

MR. C. M. GRIER, manager at Macon, Ga., resigned July 21 and was succeeded by Mr. F. B. Gabriel, who for a number of years has occupied the position of chief operator at that point. Mr. Gabriel was succeeded by Mr. George Roberts, night chief, Mr. W. T. Austin succeeding Mr. Roberts.

MANAGERS APPOINTED.—L. C. Herwig at Hutchinson, Kan., vice W. F. McCamon, resigned; O. C. Gilbert, Quitman, Ga.; Leroy Frisch, Troy, Ohio; E. Rivers, Denison, Tex.; R. C. Burkett, Piqua, Ohio; F. W. Cole, Bowling Green, Ky., vice J. C. Christian, resigned.

THE FOLLOWING TRANSFERS of managers have been made in the Southern Division: Mr. Ira Hagler from Denison, Tex., to Greenville, Tex., succeeding Mr. E. Rivers; Mr. Drew Shell from Greenville, Tex., to Farmersville, Tex., vice Mr. E. P. Allen, resigned; Mr. J. R. Lowrimore from Quitman, Ga., to Brunswick, Ga., as operator, being succeeded by Mr. O. C. Gilbert.

NEW CHARLOTTE OFFICE.—Plans are being made for a new office at Charlotte, N. C., to meet the demands of increased business at that place.

THE RICHMOND, VA., office has recently been refitted throughout with new furniture and equipment, and now presents a very attractive appearance.

WESTERN UNION TELEGRAPH CO.

EXECUTIVE OFFICES.

PRESIDENT NEWCOMB CARLTON, as chairman of the American Red Cross military relief committee, has issued an appeal for reading matter to be sent to the militiamen along the Texas border.

MESSRS. LOUIS DRESDNER, treasurer, and W. N. Fashbaugh, vice-president, traffic department, are away on their annual vacations. Among others from the executive offices who are also absent are Miss Kate O'Flanagan, secretary to President Newcomb Carlton, and Edward Everett of the money transfer and time service.

MR. A. R. BREWER, former vice-president, is spending the summer in the White Mountains.

MR. W. A. SAWYER, district commercial superintendent, New York, has returned from a trip of inspection through Connecticut.

MRS. MARGARET W. TAGGART, wife of Mr. Rush Taggart, vice-president, law department, died in New Canaan, Conn., July 30.

MR. WILLIAM F. SCHWANDT, chief operator of the Seattle, Wash., office, has been appointed division traffic supervisor to succeed Mr. G. D. Hood, resigned to accept the position of superintendent of telegraph of the Rock Island System at Chicago, Mr. L. H. Wright, wire chief of the Seattle office, has been advanced to the position of chief operator, vice Mr. Schwandt, promoted.

MEETING OF MISSOURI MANAGERS.—Managers from the second district of the western Missouri division met in Kansas City, Mo., July 26, at the Hotel Muelbach in a business and social session. A. C. Kaufman, general commercial agent, New York; A. R. McGrath, division commercial agent, Chicago; C. J. Eldridge, division cable agent, Chicago, and A. C. Cronkhite, district commercial superintendent of St. Louis, were among those present. A general business discussion of conditions relating to the telegraph situation was followed by a banquet. Managers of the company at Webb City, Carthage, Joplin, Springfield, St. Joseph and other places were in attendance.

THE MASSACHUSETTS TICKER CASE.—Chief Justice Rugg, of the Massachusetts Supreme Court, has been asked to grant the Western Union Telegraph Company, and the United Telegram Company a writ of error so that they may appeal to the United States Supreme Court from the recent decision of the Massachusetts court which ordered them to furnish continuous stock quotations to Calvin Foster, of Boston, in violation, as they claim, of the terms of a contract with the New York Consolidated Stock Exchange.

MR. PRESTON P. HUGHES, who has just been appointed manager of the Hutchinson, Kan., office, was born in Emporia, Kan., July 13, 1888. He entered the telegraph service in that place September 10, 1904, as messenger. From 1905 to 1908 he was manager of the Postal Telegraph-Cable Company's office in Emporia. In the latter year he entered the Western Union service as manager at Superior, Neb., and in September, 1910, he became manager at Grand Island, Neb., later being promoted to the managership of Butte, Mont. On account of ill health he was compelled to relinquish this position. He was next appointed manager at Atchison, Kan., which position he held at the time he was appointed manager at Hutchinson.

THE FOLLOWING APPOINTMENTS have been made: C. F. Hoover, manager, Peru, Ind., vice F. M. Andres, resigned; H. C. Pickett, manager, Indiana Harbor, Ind., vice R. M. Garrett, transferred; E. M. Brannigan, manager, North Vernon, Ind., succeeds E. J. Pruitt, transferred to Culver, Ind.; Manager R. R. Pearman, Clayton, N. M., is succeeded by R. S. Holmes; A. A. Gargan is appointed special agent to district commercial superintendent E. E. McClintock at Denver, C. J. Ince, relief manager, succeeding him as chief clerk; J. T. Hosea, of Twin Falls, Idaho, appointed manager at Conrad, Montana, vice Mr. Moscovitz, transferred to Pocatello; Miss Blanch Johnson, appointed manager at Crockett, Texas; N. A. Burns, Shawnee, Okla.;

C. A. Blagg, Blytheville, Ark.; W. V. Hearne, San Marcos, Texas; Miss L. Simpson, Lake Providence, La.; B. H. Middleton, Georgetown, Texas; Glenn Nelson, Wharton, Texas; W. H. Berryman, Quanah, Texas; R. R. Harris from Ruston to Monroe, La.; J. L. McDowell from Lake Providence to Ruston, La.; W. H. Neville from Gretna, La., to Port Arthur, Texas; H. S. Brashear, operator to manager, Texarkana, vice J. M. Delmar, appointed commercial agent; J. M. Fortunbury, assistant manager, Corpus Christi, to manager, Temple, vice C. H. Waggener, appointed commercial agent; J. E. Logan, Clinton, Okla., vice Miss Edna Johnson, transferred to manager, Insurance Branch office, Oklahoma City; new office, Plano, Texas, A. Lamm, manager; A. A. Davis from Texas Postal, Houston, to assistant manager, El Paso, vice D. C. Cason, who is appointed cashier, Dallas, vice B. B. Murray, who becomes assistant manager, Dallas; E. H. Patton has been made city commercial agent, Dallas; Mrs. Lillian Buckalew, Electra, Texas; Mr. J. R. Synovec of Fremont, Neb., has been appointed manager at Atchison, Kan.

Conference of Managers at Franklin, Pa.

A conference of managers of the Western Union Telegraph Company in the third district, Eastern Division, was held at the Park Hotel, Franklin, Pa., July 27, to consider means for serving the public and to discuss ways of improving telegraph service.

Scientific selling of telegraph service is receiving much attention in the third district and plans for attracting part of the correspondence of large business concerns was discussed.

In the course of deliberations the two most salient characteristics of the telegraph were brought forcibly to the attention of those present, *i. e.*, the one, which most readily comes to the mind is speed; the other, not yet so generally recognized, but fully as important from the business man's point of view, is its unique and compelling attention.

The meeting was under the direction of Mr. T. J. Jones, district cable manager, of Pittsburgh, and those present were, Messrs. John Simmonds, division commercial agent, New York; L. A. Watson, commercial agent, Pittsburgh, Pa.; the following managers: J. F. Calahan, New Castle, Pa.; J. T. Cullen, Corry, Pa.; A. J. Holland, Oil City, Pa.; A. A. Jeunet, Franklin, Pa., and H. D. White, formerly operator at Logan, W. Va.

S. B. Haig, Division Traffic Superintendent, Eastern Division, New York.

Mr. S. B. Haig whose appointment as division traffic superintendent of the entire Eastern Division was announced in our August 1 issue is a native of New York City, where he was born in 1869. He entered the telegraph service at Cobourg, Ont., in 1884. Later he entered the employ of the Postal Telegraph-Cable Company at New York as night city chief and afterward became day city chief, general traffic chief and assistant manager at 20 Broad Street. When he left the

Postal Company's service to enter that of the Western Union, November 1, 1910, he occupied the position of superintendent of traffic. He entered the traffic department of the Western Union



MR. S. B. HAIG.

and finally became division traffic superintendent outside of New York City. His last appointment gives him jurisdiction over the entire Eastern Division including New York City.

J. P. Edwards, Division Traffic Superintendent, Western Division, Chicago.

Mr. J. P. Edwards, whose appointment as division traffic superintendent of the Western Division, at Chicago, was announced in our August 1 issue, is a native of South Carolina, and became



MR. J. P. EDWARDS.

an operator when he was fifteen years of age. After his school days he took an apprentice's course in the shops of the National Electric Manufacturing Company at Eau Claire, Wis., and engaged in electric light, power and construction work for a few years. In 1893 he entered the service of the Postal Telegraph-Cable Company at Augusta, Ga., and a few years later went with the Western

Union at New York. In January, 1913, he was appointed division traffic superintendent at Atlanta, Ga., and November, 1914, was brought back to New York and made division traffic superintendent of the New York City division, which position he held at the time of his latest appointment.

Mr. Edwards is a member of the American Institute of Electrical Engineers and first vice-president of the Western Union Educational Society of New York.

Francis J. Farrell Jr., Dallas Tex.

Mr. Francis J. Farrell, Jr., has been appointed assistant manager of the Postal Telegraph-Cable Company of Texas, at Dallas, Tex. Mr. Farrell is twenty-eight years of age and has been with the company since 1900, when he entered the service



F. J. FARRELL, JR.

as a messenger. He has passed through the various departments as check boy, operator, manager of Commercial News Department, solicitor and now becomes assistant manager of the office in which he started as messenger.

Mr. Farrell's acquaintance in Dallas is very extensive and as a solicitor he was successful. His duties in his new position will be broadened and he will no doubt continue to render an excellent account of himself.

THE CABLE.

Cable Interruptions.

Interruptions to submarine telegraph cables are reported to July 25 as follows:

Azores and Emden (two cables), August 5; Shanghai and Tsingtau, and Tsingtau and Cheefoo, August 24; Sweden and Germany, September 30; Almeria and Melilla, October 1; Penogomera and Alhucempas (defective cable), October 1; Yap and Menado (offices closed), October 7; Obock and Djibouti, November 6; Constantinople and Tenedos, November 6, 1914.

ELECTRICAL INSTRUMENTS AND TESTING.—Wire chiefs find it necessary now and then to brush up their knowledge on testing of lines, and are some-

times at a loss to know just where to find this information. "Electrical Instruments and Testing," by N. H. Schneider and Jesse Hargrave, is a complete and practical explanation of the instruments used in testing and gives the rules for making tests of every description. Mr. Jesse Hargrave, a well-known telegraph engineer, is the author of the chapter on testing, which represents up-to-date practice. The size of the book is 5x7¼; it has 256 pages and 133 clear and useful illustrations. Price, \$1.15 per copy. For sale by TELEGRAPH AND TELEPHONE AGE, 253 Broadway, New York.

CANADIAN NOTES

George Feldman, telegraph operator, of Hamilton, Ont., died in that city on July 27. His home was in Toronto.

John W. Hartigan, aged forty-four years, a well-known operator in the States, died in Toronto, Ont., July 30. Mr. Hartigan was in that city on a visit and had just recently arrived from New York, where he had been employed by the Western Union Telegraph Company in its main office. He was a native of New Haven, Conn., where the remains were taken for interment.

Recent Great North Western changes include: J. Frezell appointed manager of St. Catherines, vice M. B. Douglas, transferred to North Bay; Miss B. Graham, operator at Berlin, appointed manager Galt, Ont.; Miss L. Culp, operator at Ingersoll, transferred to North Bay in same capacity; J. H. Hines appointed agent at Bracebridge, vice W. J. Cole, resigned; Miss G. Scott of Carleton Place appointed operator at Bracebridge; A. Mark appointed agent at Port Hope, vice J. Harcourt, who has enlisted for overseas service; Glen Kirby, operator at Brantford, appointed acting manager at Beamsville; Miss Katherine Tobin appointed operator at Amherstburg; Russell F. Finan appointed junior clerk in district superintendent's office; Miss L. Barbour, of the Toronto operating staff appointed operator at Royal Muskoka; Claude Mitchell appointed operator at Windsor.

The Dominion Telegraph Company.

Mr. G. W. E. Atkins of New York, vice-president of the Western Union Telegraph Company, has been elected a director of the Dominion Telegraph Company to fill the vacancy caused by the death of Belvidere Brooks. Sir Henry M. Pellatt is president of the company; Aemilius Jarvis, vice-president; F. Roper, secretary and treasurer; G. W. E. Atkins, R. C. Clowry, C. P. O'Reilly and G. P. Schofield, directors. The capital stock of this company is \$1,017,000. The property was leased to the Great North Western Telegraph Company from July 1, 1879, for a term of ninety nine years, the interest being six per cent., payable quarterly.

BOUND VOLUMES of TELEGRAPH AND TELEPHONE AGE for 1913, 1914 and 1915 are for sale at the office of this journal, 253 Broadway, New York. The price is \$3.50 per volume, sent by express, charges collect.

THE TELEPHONE.

MESSRS. U. N. BETHELL, senior vice-president; C. H. Wilson, general superintendent, long distance lines, and J. J. Carty, chief engineer, American Telephone and Telegraph Company, are absent on vacations.

MR. W. J. HISS, general manager of the Southwestern Telegraph and Telephone Company, St. Louis, Mo., has been transferred to New York City, to serve on the personal staff of Senior Vice-President U. N. Bethell, of the American Telegraph and Telephone Company.

MR. D. B. GRANDY of the American Telephone and Telegraph Company, St. Louis, Mo., was a New York visitor last week while on his vacation. Mr. Grandy was identified with the telegraph service in New York and Boston over thirty years ago. He called on many of his old acquaintances while in the city.

REMOVALS.—The department of Mr. F. A. Stevenson, general superintendent of plant, long distance lines, will be removed September 1 from 24 Walker Street to 195 Broadway. The traffic department, Mr. J. L. R. Van Meter, general superintendent, long distance lines, has been removed from 24 Walker Street to 195 Broadway.

TELEPHONE PIONEERS.—The Telephone Pioneers of America will hold their next annual convention at the Georgian Terrace, Atlanta, Ga., October 19 and 20. An interesting programme is being arranged. Mr. R. H. Starrett, 15 Dey street, is the secretary.

CABLE TO NANTUCKET.—A telephone cable was recently laid between the mainland and Nantucket by the Western Union steamer "Robert C. Clowry." This cable will enable the residents of Nantucket to converse with any part of the country by long distance service.

DAMAGES TO AUSTIN EXCHANGE.—The central office equipment at Austin, Tex., of the Southwestern Telegraph and Telephone Company was damaged to the extent of \$200,000 by a fire in an adjoining building which caused the walls to fall in on the telephone exchange quarters.

TELEGRAMS BY TELEPHONE IN ENGLAND.—The British Post Office is calling attention to the facilities offered for the delivery of telegrams by telephone. It is pointed out that there is a scarcity of boys for messenger duties, and the prompt delivery of telegrams is difficult.

INDEPENDENT TELEPHONE CONVENTION.—The next annual convention of the United States Independent Telephone Association will be held in Chicago, December 5, 6, 7 and 8.

PROCEEDINGS OF TELEPHONE PIONEERS.—The proceedings of the fifth annual convention of the Telephone Pioneers of America, held at San Francisco, Cal., September 21, 1915, have just been issued in book form. The volume contains a copy of the constitution and by-laws; alphabetical roster of the telephone pioneers of America; full proceedings of the San Francisco meeting; the addresses of T. D. Lockwood, H. W. Pope and C. B. Hopkins, and other matters of interest to the members. The three

addresses named make exceedingly interesting reading and the story of the trip from the eastern coast to the western coast, written by W. C. Graham, will be much appreciated by those who made it. The book is artistically gotten up and contains portraits of several prominent telephone men and of places of interest visited. All communications relating to Telephone Pioneer matters should be addressed to Secretary R. H. Starrett, 15 Dey Street, New York.

MODERN AMERICAN TELEPHONY is an excellent and valuable book by Arthur Bessey Smith, a high authority on telephony. It has 800 pages and 470 illustrations, and covers the subject very comprehensively. There are no mathematics outside of the standard electrical formulas. The book covers every branch of telephone work. Price \$2.00 per copy. For sale by TELEGRAPH AND TELEPHONE AGE.

RADIO TELEGRAPHY.

MARCONI NOTES.

MR. R. A. WEAGANT, chief engineer, Marconi Wireless Telegraph Company of America, New York, has returned from the Pacific Coast where he spent several weeks in the interests of the company.

Miss T. M. Brown of the general manager's office, has returned from a trip to Portland, Me., and Boston.

RADIO STATION AT NAVASSA ISLAND.—A radio station has been installed and is now in operation at Navassa Island light station, West Indies, now under construction. This station is operated at present by the contractors for the erection of the light station, and it will be operated by the United States lighthouse service when the light station is completed.

TESLA VS. MARCONI COMPANY.—The answer of the Marconi Wireless Telegraph Company to the suit of the Nikola Tesla Company for an alleged infringement of its patents, was filed recently in the Federal District Court. The Marconi Company denied that Mr. Tesla was at any time the original or first inventor of the alleged new and useful method of signaling set forth in the complaint. The answer also denied that the patents issued on March 17 and April 14, 1903, were duly or lawfully granted to Mr. Tesla, because he had not complied in all respects with the conditions and requirements of the patent laws. The defendant company asks that the complaint be dismissed.

INSURANCE FOR MARCONI OPERATORS.—Several important announcements regarding the welfare of employes of the Marconi Wireless Telegraph Company of America were made recently. One is to the effect that a plan had been put into execution by the company to provide life insurance for those who have been in the Marconi service for more than one year without expense to the holders of the policies. Accident insurance, valid for one year, has been furnished to such of the ship operators who are not eligible for regular life insurance under the conditions of the company's plan in order to give them protection until they become

qualified for the life insurance privilege. A suitable allowance will be made for personal effects lost by Marconi operators while on duty at sea in storms and wrecks, it has also been announced. The company has enrolled many of its rank and file as a naval reserve, having furnished the Navy Department with a complete list of its employees.

THE YEAR BOOK OF WIRELESS TELEGRAPHY AND TELEPHONY (1916) has just been issued by the Wireless Press, Ltd., London, for which the Marconi Publishing Corporation, New York, is the sole agent for the United States. The volume, which contains 876 pages, includes a vast amount of information for wireless people, and it is impossible to think of anything connected with wireless that it does not cover. It is a book that will be put to constant use by any practicable wireless man. Among the principal contents may be mentioned wireless telegraph laws and regulations enacted by different countries of the world; a list of wireless telegraph stations of the world; and an article on international time and weather signals. There are several contributed articles on wireless telegraph subjects and a good deal of general information of every day utility to the engineer. The price of this book is \$2.00 per copy and copies may be purchased through TELEGRAPH AND TELEPHONE AGE, 253 Broadway, New York.

OBITUARY.

RUDOLPH JOCKERS, aged twenty-eight years, a Western Union lineman, was killed by lightning at Springfield, N. J., July 13, during a violent thunder storm.

HENRY V. COX, aged seventy-nine years, one of the builders of the Deseret Telegraph Company in Utah in 1865 and 1866, died in Salt Lake City July 17. He was in the telegraph service until about ten years ago.

MUNICIPAL ELECTRICIANS.

'Programme of Municipal Electricians' Convention at Baltimore, Md.

The numerous preliminary details of the twenty-first annual convention of the International Association of Municipal Electricians, which will be held in Baltimore during the week of August 21-25, are rapidly being cleared up, and from the number and importance of the papers to be presented the meeting will be one of the best ever held by the association. The city government, under the direction of Mayor Preston, is lending assistance, and several of the large public service corporations are cordially co-operating to make the meeting a real demonstration of Baltimore hospitality.

The official programme of the convention is as follows:

Tuesday, August 22, 10 a. m.—Convention called to order by the president, Mr. W. H. Flandreau; Invocation; Address by Mayor James H. Preston; Response by Dr. Chas. P. Steinmetz, consulting engineer of the General Electric Company, Schenectady, N. Y.; President's address.

2 p. m.—Concentric Wiring, Mr. C. F. Abbott, Pittsburgh, Pa.; Wireless Interference with Interior

Wiring and Signal Lines, Mr. W. J. Canada, Bureau of Standards, Washington, D. C.; The National Code and Its Value to our Association, Mr. R. A. Smith, city electrician, Norfolk, Va.; Rubber Insulation for Electrical Purposes, Dr. Wipple, chief chemist, Safety Wire and Cable Co.

Wednesday, August 23, 10 a. m.—Electric Power and Its Value to a Municipality, Dr. Chas. P. Steinmetz; Modern Electric Municipal Plants, Mr. Frank Dix, superintendent municipal electric plant, Fort Wayne, Ind.; Report on Municipal Lighting.

2 p. m.—Trip on the bay. Lunch will be served.

Thursday, August 24, 10 a. m.—Electric Fire Hazards, Mr. F. H. Moore, president of the Western Association of Electrical Inspectors; Street Signals and Traffic Warning in Connection with Fire Apparatus, Mr. L. S. Brach, Newark, N. J.; Standardization, Engineering Department of the National Lamp Works, Cleveland, Ohio; Report of finance committee.

2 p. m.—Election of officers and selection of place of next meeting; The Fire Alarm System, Mr. C. E. Diehl, Harrisburg, Pa.; Police Telegraphy, Mr. J. W. Kelly, Jr., Camden, N. J.; Committee reports.

Friday, August 25, 10 a. m.—Report of committee on high voltage.

2 p. m.—Report of committee on exhibits; Report of committee on licensing electricians; Report of committee on electrolysis.

Saturday, August 26—Trip to Bureau of Standards, Washington, D. C.; Demonstrations of wire breaking tests, radium, wireless telegraphy, liquid air, lamp testing, scales, cable rope and structural column testing, extinguishers, fire resistant testing, electrolysis.

The Consolidated Gas, Electric Light and Power Company, Baltimore, will give a reception and entertainment to the visiting members of the association. Mr. Herbert Wagner, president of the company, who is also president of the National Electric Light Association, will preside at this meeting.

A special committee will entertain the visiting ladies and arrange to show them the interesting and historic places in the city and the suburbs. A special luncheon will be given the ladies, and the Merchants' and Manufacturers' Association has arranged to furnish automobiles for a trip through the city and the suburbs.

The local convention committee consists of Mr. J. B. Yeakle, chairman, G. E. A. Fairley, principal assistant engineer of the Electrical Commission, and Mr. Douglas Burnett of the Consolidated Gas, Electric Light and Power Company.

FIRE ALARM SYSTEM OF PASSAIC.—The fire alarm system of Passaic, N. J., is part of the fire department and is supervised by W. S. Gibson, first assistant chief. There are ninety-nine non-interfering boxes and fifty-five successive. Twenty-three are private boxes or are inaccessible to the public, being located in theatres or school buildings. A large amount of underground cable has been installed during the past year and practically all of the overhead wiring has been overhauled.

Sidelights on Success *

BY H. J. PETTENGILL, PRESIDENT THE SOUTHWESTERN TELEGRAPH AND TELEPHONE COMPANY,
ST. LOUIS, MO.

All the world loves a winner, and the world admires the pageantry of power and is inclined to envy the princes of fortune that flash before its eyes for an hour or a day. But the world, as a general thing, does not know of the toil and battle and midnight lamp and indomitable courage in the face of every obstacle and disappointment that lie behind every brilliant success upon which it gazes today. Good fortune, unusual talent, genius or some wonderful stroke, to these are popularly attributed the great successes of the world. But it has been my observation, through many years spent in close touch with men and affairs, that the application of the simple, homely, common sense principles at the command of almost every man, win more than half of the successes in every field of endeavor.

Good health, hard work and far-sightedness are the chief essentials of success and all the rest are merely the trimmings that help us to reach our goal more quickly or to achieve a greater degree of success. Every healthy man can work hard, if he will. Farsightedness consists in merely calling upon the head to aid the muscles to win to the top of the hill. It requires no special talent or genius to look ahead; to think.

The machinist may become an engineer if he masters the essentials of his calling in the shop and the principles of his calling from the books that he can study at night. He must fit himself for the next step; that is all. If he is ambitious to rise and will apply old-fashioned common sense and a little thought to his problem he will climb step by step. Looking ahead, these steps seemed hard, but looking backward, he is surprised at how easy they were; at how anxious the world always is to reward effort and initiative.

The late James Hurley, general manager of the great Santa Fe Railroad System, started in life as a hack driver in a country town. Asked many times for the secret of his wonderful success, his invariable answer, crisp and emphatic, was "hard work."

He simply gave thought to his case and fitted himself for a better position than that of driving a hack. It was a small success at first, but it was easy. He was using his head more, and he was getting more money for it. He gave the direction of his particular state of affairs over to common sense and worked hard and harder and worked overtime, and, although he has been dead for several years, this ex-hack driver's name is a byword for success and achievement among railroad men from Chicago to the Pacific Coast. James Hurley's case is an apt exemplification of Solomon's proverb: "Seest thou a man diligent in his business. He shall stand before kings. He shall not stand before mean men."

There are no fairies today with their magic wands, or genii of Aladdin's lamp to make us kings

or build us palaces at our wish, and the gold ships of our dreams will never return from the Spanish Main. If we would win success we must pay for it. We must pay by giving up many pleasures and devoting more thought and effort and attention to the serious thoughts of our life work.

The world claps its hands in thoughtless, happy admiration at success, but the successful man looks back down a long path that was uphill all the way and he knows in his heart that he won by sheer staying qualities and hard work.

The records show that the man who was born with a silver spoon in his mouth or who started life's battle with a "pull," is not generally as successful as the man who began alone and unaided at the bottom. Looking over the list of executives of our Southwestern Telephone System, I find that one began as an office boy in a bank, another as a telephone operator in a small village, another as a telegraph messenger boy and another as a locomotive fireman. And I could narrate a score of similar cases where poor young men, without any particular talent or genius, have succeeded by hard work, loyalty, intelligent effort and making the most of their opportunities.

The race is not always to the swift, nor the battle to the strong. Patience, tact, thoughtfulness, courtesy, kindness, optimism, gentleness, these are all mighty weapons in life's battle for success.

If a man would succeed he must love his work. Many able men have fallen far short of success because they were square pegs in round holes. A certain natural aptitude is required in each separate branch of endeavor. Poets are born, not made, and so, in a less degree, are merchant princes, architects, engineers, orators, accountants, writers, bankers, bakers and candlestick makers. In other words a man must have a certain aptitude for his line of work if he is to make a fine success in that line. There are exceptions, I know, but that is the rule. And, firm in the conviction that I am right, I would urge the man who is doing his level best and yet is not a success, to change his line of work, for there is always a place somewhere in the world for the man who does his best, and in that place there is always a chance for the success that eludes him now.

I also firmly believe that there are two kinds of success. One, the mere material success, the tinsel and glitter of which the world sees and admires, and the other that real success of the heart and the spirit without which the greatest of success is marred past the mending. The man who places success above everything pays too much for it. The man who is out to win by hook or crook loses, even when he wins. There is a spiritual as well as a material success and they go to form the ideal when they can be made to walk hand in hand in this vale below. By that I mean the man who, when he wins, still does unto others as he would that others should do unto him.

If you are promoted to be a foreman, consider the man below you if you would not have the fruit of success turn, some day, to ashes in your mouth. When you become the head of a department, your

*From *Missouri, Kansas and Texas Employees Magazine*.

responsibility, as well as your pay and position in the world, increases. You are responsible, not only to your company, but to the men and women under you. Your real success depends upon your treatment of them as man to man. To be deserving of your place you must study these people and learn when to be firm and when to be gentle. You have also to consider the public that your company serves. Your success as a department head or superintendent or manager is ill deserved, no matter how able you are in your work, if you fail in tact or patience or tolerance or fairness with the public.

That Corsican lieutenant of artillery known to history as Napoleon the Great, has stood before the world for more than a century as the symbol of success. He rose, by the force of his will and his genius alone, from obscurity to heights of fame and a place of power never reached before by a mere mortal. When we wish to apply the last word in admiration to a successful man of today we call him a "Napoleon of finance," or a "Napoleon of railways," or a "Napoleon of organization," or a "Napoleon" of anything. The little corporal's career reads like the glory and grandeur of the Arabian Nights. But, this man, who was so great, this essence of genius who occupied the thrones of two great nations and who crowned his brothers and parceled out the rest of Europe as dukedoms among his brave marshals, consider his end! He was cold and cruel, and his generals fell away from him when the crisis came. He was ruthless in his dealings with conquered peoples and his ambition was relentless and his power blinded him to the rights of humanity. The inevitable result was that the nations he had conquered rose against him again and again and in the end they destroyed his invincible armies and drenched France in blood and took Paris and banished the imperial dictator of Europe to a desert island of the sea. They say he died of a cancer, but it was the cancer of remorse.

And so it seems to me that if the most splendid career of all the ages could be wrecked by its own arrogance and misuse of power, we in our lesser spheres should be more and more considerate of the feelings and rights of others as we climb the ladder of success.

And the higher you climb the more your responsibilities and obligations. The interests of the company, the public and your subordinates are in your hands, in a measure, and then there are your own interests. You must balance and weigh them with a proper regard for all if you would enjoy your success with a tranquil spirit.

Our lives are like ships upon the sea. The waves run high between us and the harbor of success which we all are seeking. And there are reefs to cross before we ride safely upon the placid waters of that haven. But a stout ship, a brave captain and a skillful pilot may win to this anchorage. And if you are worthy they will send an admiral's launch to bring you ashore and they will take you to the Castle of Golden Hopes Come True on the hill and the windows will blaze with lights and a

feast be spread in the great guest hall. The welcome will be worth all the perils and hardships of the stormy voyage. But we must all cross high waves and buffet adverse storms to reach this happy haven. It lies beyond the skyline and if you are afraid or lazy or satisfied with your own small coastline, you will never sail far enough to even see the turrets of that magic castle on the hill.

Your ship is small, you say, and the sea is rough and the way is far? Bah! Columbus crossed the Atlantic in a ship that we would call a fishing smack today. And his name and his deed will never die. The size of the ship does not count. It is the heart that sails the ship. A brave heart will sail his frail ship sublimely into the tempest, and a strong and skillful hand will steer the smallest craft in safety through the wildest sea and past the shoals and rocks to the haven of success.

Answers to Questions.

(51) Q.—In your May 1 issue you mention the filing by one person of 62,000 messages in the Postal office in Boston, April 21. Has this ever been equaled? E. A. H.

A.—About fifteen years ago the Encyclopedia Britannica of London filed over 100,000 telegrams at one time addressed to prospective purchasers announcing the completion of that great work and stating that it was ready for delivery. In this connection it is interesting to note that the two telegraph companies received at their Washington offices about 140,000 "peace" messages the latter part of April. These messages came from all parts of the country, and were all of the same character.

(52) Q.—Can you tell me the size of the largest telephone cable in use, and the number of wires it carries? C. T. R.

A.—A type of cable has been perfected which carries 2,400 wires in a sheath having a diameter of $2\frac{3}{4}$ inches. The importance of this development is shown by the fact that in some of the earlier types of cable not more than 100 wires could be placed in the same space now occupied by 2,400. The value of this cable is very great for use in congested regions, for underground work in large cities, where it is impossible to place any more ducts.

NEW IDEA IN VACATIONS.—Ray D. Lillibridge, Incorporated, advertising agents, New York, will try a new idea in giving its employes a vacation this year. Instead of stringing out individual vacations through the summer the concern proposes to "shut up shop" for the first two weeks in August, when everyone will go away at the same time. The idea is a good one and might be adopted by other concerns that can adjust their business to such conditions, but telegraph and telephone companies and publishers, unfortunately, cannot do so. These businesses must give continuous service.

Mr. W. E. Vanarsdale of the Western Union Telegraph Company, Philadelphia, Pa., in remitting to cover his subscription for another year writes: "I cannot do without TELEGRAPH AND TELEPHONE AGE. Check enclosed."

Why Operator Hamm Reported Late.

BY R. M. TELSCHOW, NEW YORK.

Eddie came stalking into the office fifteen minutes late—and Edward was tardy about as frequently as the flitting of a psychological manifestation across the thinkbox of a Rocky Mountain canary bird. He looked sour grapes, pickles and tamarinds all at one and the same fell swoop. Truth was, he was fearfully indignant.

"Good morning, Eddie," ventured Sammy Hill.

Edward merely glowered at Samuel.

"Hello, little brighteyes," sweetly piped Lucy Longfinger, the typist, with whom Eddie delighted to flirt under normal circumstances.

"Oh, go to the blank blank," ranted Edward T. Hamm, his eyes aglow with malapert dignity as he rushed fitfully past the smiling doll.

Later the truth was dragged piece meal from the reluctant quiescent Edwardino.

"I've sworn off drinking," were his first words of explanation.

"Can this be a quirk or a quip?" flashed through each quidnunc's quiz department simultaneously. Everybody knew Mr. Hamm was a decently inclined person whose thrift forbade indulgence in worldly vanities, aside from an occasional loud necktie, or an Erin-go-bragh species of kelly.

When the facts became generally known, the consensus of opinion decided it was only another sacrifice hit on Eddie's part, who always played fair and square. Edward had a feeling of compassion for others and swore off a habit he didn't have simply because it was a bad habit anyway and caused much discomfort and suffering to the human race.

"Yes, sir, I'm going to join the anti-saloon league, too," he confided further. "Saloons are no good; they cause misery and unhappiness."

"Anything else you've sworn off, kid?" ventured Ignatz Hogan, a fresh office boy.

Eddie glared at the youth. But the innate humanness of mankind in general and telegraph operators in particular quickly softened his heart, and his tense features relaxed into a benevolent look of compassion. Why should he be harsh on Ignatz, who perhaps was an orphan, and never knew the guiding hand of a mother?

"As long as the truth must eventually be disclosed," compromised Eddie, in a further confidential outburst, "no more jitneys for mine!"

It was his first experience with a jitney bus, he avowed, and alas, by his own admission it was also to be his last. The momentary pleasure of that first wild excess seemed to have been succeeded by bitter pangs of mental anguish.

"For the love of Mike, Eddie," chirped Andy Horn, a cousin of the manager, "what has swearing off drinking, joining the anti-saloon league and giving jitneys the go-by got to do with your parading in here fifteen minutes late on a busy Monday morning?"

"Listen, fellows, while I reel off the whole sad scenario," grinned Eddie, "you shall remain in the dark but a very short time. Edward, (that's

me) dolled up for the day's rollicking exercises, appears on the corner where his favorite trolley car usually collects him for transportation to the financial district. Shucks, Edward growls, no car in sight. Ah, what is that in yon dim distance? Methinks 'tis a jitney bus. Good Yankee guess. Always safe to guess when you guess right. Jitney comes up to the curb insinuatingly. Shall I, or shall I not? Edward climbs up and sits in the stuffy vehicle and hands the dark-visaged chauffeur a brand new buffalo nickel. She moves. Had a late start from home, but gonna get downtown on time according to present indications. She cuts wind. Big man on sidewalk yells 'Hey, Bill!' Bus stops. The new passenger is a personal favorite of the czar—I mean chauffeur. 'Long time between drinks, it's my treat,' says large person. 'Not on your life,' from the jitney engineer, 'it's on me.' Next scene, corner refreshment bazaar en route. Cheerful chauffeur and physical plus step into the picture—that is, liquor emporium. Jitney remains passive. Scene within the benzine palace distinctly visible to the naked eye from almost any point of vantage on the bus. Seven trolley cars and four opposition jitneys shoot past the marooned auto. Passengers who have never sworn before, now swear fluently, unabashed. I swear off on several indictments myself. When I perceive the harm done a lot of innocent people (bystanders, as it were) by the drinking habit I vow 'no booze for Eddie,' the reek of stale beer oozing through the thick atmosphere from the busy bar reaches my aesthetic nostrils and I decide instantan to join the anti-saloon league. Here they come out now. We're off again. Reach destination. Chauffeur demands another nickel. 'I gave you a new buffalo nickel before you went into that drug store,' I said. 'You mean gin mill,' corrected he. 'Some thing,' says I, 'both sell poison.' That's why I say no more jitneys for me. They'll never buffalo me again."

NO. REDRESS FOR ERRORS.—When an error is made in a telegram sent over privately-owned telegraph lines there is a way to obtain redress for damages, but where government-owned lines are concerned there is no help for the one who suffers the loss. Recently a New York firm received, from a regular consignee in a foreign country, an order for 2,000 packages of merchandise. The goods were purchased but on receipt of authorization by mail it was discovered that the buyer had cabled for 200 packages instead of 2,000. On investigation it was found that the error had been made on lines which were owned by a foreign government, and that the connecting land line company was in no way responsible for it and could not be held for damages.

Mr. J. M. Barnes, of St. John, N. B., in remitting the cover his subscription for another year, writes: "During the year just ended many helpful articles have appeared, one of the most ingenious being that of Mr. Daymude, of Lansingburgh, N. Y., wherein he makes it easy to carry Ohm's law in your head." (Mr. Daymude's article may be found on page 241, May 16 issue.)

Marconi Company Sues the United States for One Million Dollars Damages.

The Marconi Wireless Telegraph Company of America on July 19 filed in the Court of Claims, a petition against the United States, charging that since June 25, 1910, the United States, through the Navy and Army departments, and the Department of Commerce, has constructed and used apparatus embodying the inventions covered by four certain patents in violation of the rights of the Marconi Company. The Marconi Company claims damages in the sum of \$1,000,000.

The substance of the petition is as follows:

That on the twenty-fifth day of June, 1910, and for a long time prior thereto, your petitioner was the owner by duly recorded assignments of the entire title to each of the following described letters patent of the United States, namely:

Re-Issue No. 11913 (Original No. 586193, July 13, 1897), granted to G. Marconi on June 4, 1901, for transmitting electrical impulses and signals and apparatus therefor;

No. 609154, granted to O. J. Lodge on August 16, 1898, for inventions in electric telegraphy;

No. 763772, granted to G. Marconi on June 28, 1904, for apparatus for wireless telegraphy.

No. 803864, granted to J. A. Fleming on November 7, 1905, for instrument for converting alternating electrical currents into continuous currents;

by each of which said letters patent of the United States there was granted and secured to the assignor of your petitioner, for the term of seventeen years from the date thereof, respectively, the full, sole and exclusive right and liberty of making, using and selling the invention set forth in and by said letters patent throughout the United States and the territories thereof to the full end of the term thereof.

Your petitioner alleges that it is, and at all times since the date of the assignments thereof to it has been, the sole and exclusive owner of the inventions set forth in said letters patents, and now is, and at all times since the date of the assignments to it as aforesaid has been the sole and exclusive owner of said letters patent, and that no action on the claim herein made and set forth has been had either by the congress of the United States or by any of the departments of the government. * * * *

That your petitioner avers that said letters patent are valid and effectual in law to secure to your petitioner the exclusive rights and privileges thereby granted, and that your petitioner is entitled to the sole and exclusive use and enjoyment of the said inventions and the said letters patent, and to the exclusive rights and privileges thereby granted and to receive the profits of the same, except in so far as your petitioner may have granted to others the right to use the same. * * * * That the infringement by the United States of the said letters patent, as herein complained of, has been in violation of the exclusive rights and privileges granted by said letters patent and has seriously interfered with the enjoyment thereof by your petitioner, as it was by law entitled to do, and has prevented it from receiv-

ing the profits to which it was entitled as the sole owner of said inventions and said letters patent.

That none of the inventions covered and claimed in the said letters patent were discovered or invented by the patentees thereof while such patentee was an employe of the government of the United States, nor was any of such patentees in the employment or service of the government of the United States at the time said letters patent were assigned to your petitioner.

That your petitioner avers, that the United States, through its officers or officials of its Department of the Navy, its Department of War, its Department of Commerce, and various of the bureaus of its said departments, and through other officers and agents and otherwise, well knowing the premises and the exclusive rights and privileges granted by said letters patent, and that such exclusive right and privileges had become vested by duly recorded assignments in your petitioner and further well knowing that the validity of said letters patent had been adjudicated in favor of your petitioner by several of the courts of the United States, has, since the twenty-fifth day of June, 1910, and before the filing of this petition, without license of your petitioner, and without lawful right, made and constructed, and used, a very large amount of apparatus containing and embodying in use the inventions covered and claimed in and by said letters patent of the United States, in violation and infringement of said letters patent and of the rights of your petitioner thereunder. That in violation and infringement of said letters patent and of the exclusive rights and privileges of your petitioner thereunder, the United States, through its said officers and agents, has, since the said twenty-fifth day of June, 1910, entered into agreements with divers persons and corporations, among such persons and corporations being Fritz Lowenstein, Emil J. Simon, Telefunken Wireless Telegraph Company, Atlantic Communication Company, Kilbourne and Clark Company, Wireless Specialty Apparatus Company, and other persons and corporations for wireless apparatus which constituted an infringement of said letters patent and the inventions set forth thereby, and has used, and is still using the apparatus so obtained. That such unlawful and unauthorized use of your petitioner's said patented inventions, and such violation and infringement of your petitioner's letters patent, has resulted in great injury, damage and loss to your petitioner, in the aggregate sum of \$1,000,000, which sum is justly due to your petitioner and which sum, or such other reasonable compensation as this honorable court may find to be due your petitioner, your petitioner avers it is justly entitled to recover, after allowing all just credits and offsets.

Your petitioner further shows the court that it has at all times been ready, able and willing to furnish and supply to the United States any of the inventions set forth in said letters patent, together with apparatus embodying said inventions and to charge the United States only reasonable prices therefor.

Your petitioner further shows the court that upon learning of the infringement by the United States

of the said letters patent and the inventions set forth and claimed therein of which inventions and letters patent your petitioner was the sole and exclusive owner, your petitioner notified and warned the United States to desist therefrom, well believing that it would cease the same; but that, notwithstanding such notice and warning, the United States neglected and refused so to do, and still continues to make and use the inventions set forth and claimed in said letters patent, in infringement of your petitioner's rights in the premises.

Your petitioner's said claim for compensation for the use of said patented inventions is not based in any part on the use by the United States of any article or apparatus owned, leased or used by or in the possession of the United States prior to June 25, 1910.

Wherefore your petitioner prays judgment in its favor against the United States for the sum of one million dollars (\$1,000,000), and for such other and further relief as to the court may seem just.

The petition is signed by Mr. Edward J. Nally, vice-president and general manager of the company.

Handling of the Bridge Polar Duplex.

BY C. J. MCKEE, EAST LAS VEGAS, N. M.

(Concluded from page 363, August 1.)

SUMMARY OF ORDINARY CONDITIONS.

Normal deflection: Direction of your point switch.

Point switch: Opposite to direction of end battery switch.

Wire open: Opposite to your battery switch.

Wire grounded: Direction of your battery switch.

Too much resistance: Direction of your battery switch.

Not enough resistance: Opposite to your battery switch.

Too much capacity: Opposite to your battery switch.

Not enough capacity: Direction of your battery switch.

Incoming signals heavier, outgoing lighter: If "bust-up" increase resistance, if regular, decrease.

Incoming lighter, outgoing heavier: If "bust-up" decrease resistance, if regular increase.

Your artificial line open: Change from zero to double regular reading.

End artificial line open: Acts O. K.

End open pole open: Regular—Needle bobs, can't read. Acts O. K.
Bust-up—can read and acts O. K.

End closed pole open: Regular—Can read but acts like an open.

Bust-up—Needle bobs, can't read. Acts open.

EXPERIENCE APPLICABLE TO ANY OFFICE.

Never waste a minute in getting up an emergency route if there is one available; you may need it within the minute.

Suppose an emergency route between two certain offices is the only wire between these points and that it can either be connected to a wire in one di-

rection to protect one of your leases, or to one in another direction and protect a lease of some other office. Cover your own lease and make the patch for the other office. This will place the delay caused by making the patch on the other fellow.

Call your offices and verify that they are on O. K. just before the wire starts. This will often avoid a delay.

The principals on a lease usually consider time lost due to breaks and talking about breaks as delay. The idea should be to watch wire close enough so as to remedy any possible bad condition before it causes breaks.

It is not unjust to prohibit reading in repeater room as it tends to distract you from your work.

Keep your sets clean.

Close all windows before leaving for the night. There may be a cyclone or it may rain in.

Test all emergency looks daily.

Go over all lock nuts on adjustments and see that they are tight just before wire starts.

Where more than one man is handling a change, patch, etc., apply team work—each has a prescribed part to handle and do your portion, leaving others involved to do theirs.

Never take the slightest chance with a working lease. A patch or a chance can be all worked out before hand and apparently cause only a slight interruption in making it, but it seldom turns out as planned. Don't take a chance.

An eminent surgeon, in describing to his students an operation in which the work had to be done within two minutes or the patient would die, said that it could easily be done within the prescribed time providing they didn't hurry. This applies to your work. When in a hurry, take your time.

These things all help to make you a more efficient and better liked employe but the following do not:

Don't step on a dynamo or motor, either covered or uncovered; it scratches the enamel on the machine. Don't place a wet drinking glass on a pad of forms or where the water will do damage. Don't use the duplex table for a foot rest no more than you would your piano. Don't spit on the floor; this is often the habit of good clean fellows but it is not a desirable one. Don't use the shelves of coil rack and battery cabinets for a step ladder.

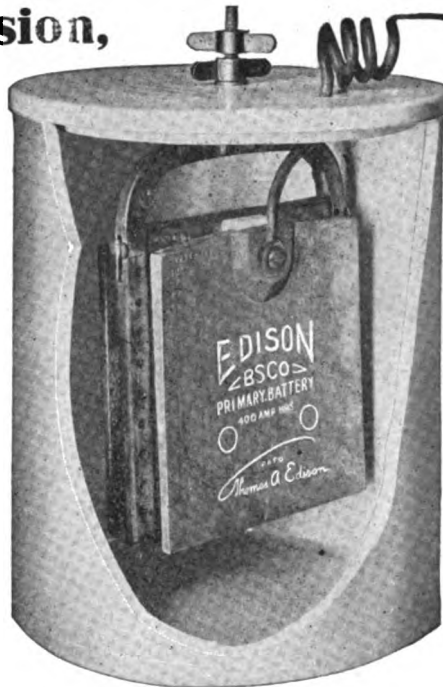
Relation of Conductivity to Insulation Resistance.

Practically the end aimed at in all telegraphic circuits should be to make the resistance of the conductor as small as possible, and the resistance of the insulation as great as possible. Therefore, in constructing a telegraph line, it is important to employ the best possible conductor which the necessary limitations of cost will permit, and to prevent the escape of the current in undesired directions by the use of the most efficient insulators.

MESSENGERS.—The New York *Evening Telegram* recently published an interesting article on the intelligence and activity of the modern telegraph messenger. The story related to the messengers of the Postal Telegraph-Cable Company and of the American District Telegraph Company.

Clear Transmission, Always Necessary, Warrants Use of the Highest Grade Battery

A low internal resistance battery that will not polarize, and maintains constant voltage, is sure to give better results in telephone work than a set of cells whose voltage constantly drops when on discharge, or in which the voltage is high or variable.



The Edison Primary Cells

maintain a lower uniform internal resistance than any other primary type; they furnish constant voltage and do not polarize at normal discharge rates; the 400 ampere hour size has a life greater than twenty single sets of dry cells and they require no attention between recharges, even though the service is such that a period of years is required to consume their capacity.

Type 403 400 Ampere Hours Capacity

Improve Your Service by Installing Edison.

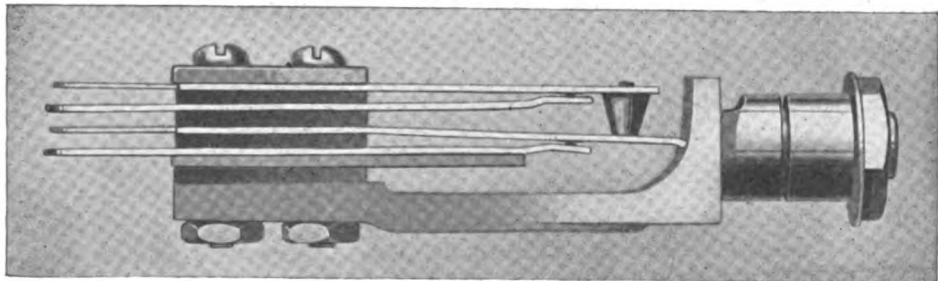


THOMAS A. EDISON, Incorporated
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Strong, Substantial Jacks for all Purposes

Not lightning proof, of course, but as nearly so as Jacks can be.



Actual size

Made in a wide variety of contact combinations.

HALL SWITCH *and* SIGNAL CO.

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CHICAGO

Manufacturers of the GILL SELECTOR

The Universal Selector for Telegraph and Telephone.

KERITE

THE use of Kerite is the logical result of experience.

The *increasing* use of Kerite is the logical result of an increasing appreciation of the sound policy of using nothing but the best.



KERITE INSULATED WIRE & CABLE COMPANY
NEW YORK CHICAGO

THE RAILROAD.

W. L. Connelly Appointed Secretary - Treasurer of Association of Railway Telegraph Superintendents.

Mr. W. L. Connelly, superintendent of telegraph, Chicago, Indiana and Southern Railroad, Gibson, Ind., has been appointed secretary-treasurer of the Association of Railway Telegraph Superintendents to fill the vacancy caused by the resignation of Mr. P. W. Drew, who filled the office for thirty-three consecutive years. Mr. Connelly entered upon the duties of the office July 13, having been appointed by the president of the association, in accordance with the provisions of the constitution.

Mr. J. J. BERNET, vice-president New York Central Lines, and a former telegrapher, was elected president of the Nickel Plate Railroad Company, which was reorganized in Cleveland, Ohio, recently. Mr. Bernet was born at Brant, N. Y., and is forty-eight years of age. He worked for the Lake Shore and Michigan Southern Railway as an operator in 1889, and rose rapidly to higher positions.

Mr. E. D. HUBBARD, general foreman Grand Trunk Railway, Battle Creek, Mich., has resigned to enter a copartnership in the electrical business in that city. The name of the firm is Hubbard-Howell Electrical Company.

WIRELESS EXPERIMENTS ON THE UNION PACIFIC.
—A recent photograph of a car on the Union Pacific System, equipped with the Millener system of wireless telegraphy, shows an elaborate antenna. At each end of the car roof is an angle iron support, stirrup shape, and between these supports wires are run parallel with the length of the car. There are about fifteen of these wires. The car is a converted diner and is fitted for telegraph, telephone, wire and wireless experiments. The company has a wireless station on the roof at headquarters in Omaha and is just about to open one at Grand Island, Neb. A station at North Platte, Neb., will be established in the future. Dr. F. H. Millener is conducting the wireless experiments on this road.

It is Second Nature.

The habit that many telegraph operators have of climbing and reaching the top of the ladder is the subject of an editorial article in the New York *Sun* of July 19. The article is headed "They That Desert the Key," and is as follows:

"Why do telegraph operators become railroad presidents? The question forces itself upon the mind through the reiteration of facts. As often as we read that the winds will be moderate and southerly, and that Villa is dead, just so often do we read that the new head of the so and so railroad began his business career as a sender of Morse messages. Bernet of the Nickel Plate, Calvin of the Union Pacific, Levey of the Western Pacific, these are three of this summer's crop of presidents who went, as a railroad poet might say, from the sounder to the sceptre. The list of distinguished railroad presidents of these and older days is full of operators: Van Horne of the Canadian Pacific,

Hughitt of the Northwestern, Newman and Brown of the New York Central, McCrea of the Pennsylvania, Hayes of the Grand Trunk, Tuttle and Todd of certain New England lines.

"How telegraph operators become railroad presidents would be easy to tell. Your operator hears everything, knows everything, does everything. He is aware how far a division superintendent may go in spirited debate, by wire, with the general manager. He comes to know upon what days the chief dispatcher is afflicted with tantrums. He flags the night express on the brink of the washout, supplies the jolly brakeman from his own paper, fine cut, chops Mrs. Jones's telegram to ten words, fills the station stove, figures transmississippi freight rates, sells excursion tickets and has an eye for the ladies. On Sunday afternoons, between the 2:46 and the 5:58, he plays first base on the town nine. Thus he acquires a rounded life, with the wisdom of near and far. Presently the boss of the division takes him into his own office and his doom is written. Nothing but the scythe or the bottle can prevent him from becoming president of the road.

"Why he lets himself be hurried' on down the path puzzles us. He wears better clothes as he goes on, but is obliged to pinch the fine cut surreptitiously. He joins a country club, but his old place in baseball is lost to him. The brakeman calls him Mister instead of Joe. Nobody flags the night express and he spends a week with a coronor's jury. Coming to the presidency, he finds that the rates east and west of Clinton, Iowa, instead of being horribly complicated, are merely horribly small. The eye that once was for the ladies is now cast languishingly at the Interstate Commerce Commission. He is 55, practically fat, and plays golf. They all play golf, these presidents who were brass-pounders. It seems to be part of the doom.

"All in all, the operator who falls to the position of president reminds one of some doughty adventurer who has been lured away from adventure. Time was, for him. As he sits in his mahogany inglenook, holding out his road's empty bowl to the Commerce Commission and begging for just a little more freight rate gruel, one prefers not to remember the lad who was so free and lithe and gay.

Tick — Tick — Tick R E M C O

Do you hear our "Remco" selectors? Listen—listen, for they don't make much noise. Neither have we made much noise about them—hasn't been necessary—they speak for themselves. But ask the telegraph superintendent who has them in service on circuits where he wanted 100% selector efficiency. And he got what he was looking for when he installed

R E M C O

Railway Electric Manufacturing Co.

Office and New Factory

250-2 W. Water St.

Milwaukee, Wis.

"But as to the reason why telegraph operators persist in doing as they do, we cannot say. Nor do we hope to change them. Probably it is the decree of their weird."

Selective Telephone Train Dispatching.

"Remco" selectors and telephones have been installed and during the past three years have been used on some of the largest railroads in the United States. European railroads were very much interested, to the point of placing orders for the equipment, when the war broke out. Among the list of "Remco" equipment users are to be found: The Atchison, Topeka and Santa Fe Railway System, the Gulf, Colorado & Santa Fe, the Illinois Central and Oregon Short Line.

The company makes especially designed equipment for electric inter-urban lines where instead of a regulation train dispatching system, such as most steam roads use, an intercommunicating system of telephoning is frequently preferred. This company has recently equipped the Salt Lake & Utah Railway with such a system, whereby any station can call any other station on the same wire and circuit without disturbing any other.

The "Remco" equipment is manufactured by the Railway Electric Manufacturing Company, which recently removed from Chicago to Milwaukee, where it now enjoys excellent facilities for the manufacture of its products.

MUNICIPAL ELECTRICIANS.

SIGNAL SYSTEM FOR NASHVILLE.—The installation of an electric signal system at Nashville, Tenn., is recommended. At the present time it is not uncommon for a patrolman to be compelled to walk a mile or more at night to reach a telephone.

BALTIMORE'S FIRE ALARM TELEGRAPH.—The total number of fire alarm boxes in Baltimore, Md., is 753, all being of the Gamewell make and of the spring actuated, trigger pull, non-interfering type. A separate telephone circuit and a separate signaling circuit are provided for emergency use in connection with the high pressure fire system. The fire department telephone system is connected with the municipal switchboard in the fire alarm operating room at city hall. Mr. James B. Yeakle has been superintendent of the fire alarm telegraph since 1908.

THE INTERNATIONAL ASSOCIATION OF MUNICIPAL ELECTRICIANS will hold its twenty-first annual convention at the Rennert House, Baltimore, Md., August 22 to 25, both inclusive. Mr. Robt. J. Gaskill, chairman of the executive committee, is arranging for papers, and Mr. J. B. Yeakle, of Baltimore, is chairman of the local committee. One of the entertainment features will be a visit to the Bureau of Standards in Washington. Mr. Clarence R. George, city electrician, Houston, Tex., is secretary of the association.

EATS TELEGRAPH CABLES.—Mr. Donald McNicol, of the engineer's department, Postal Telegraph-Cable Company, New York, is the author of an article in *The Railroad Man's Magazine* for August, in which he describes and illustrates a bug which eats the lead encasing telegraph cables.

OBITUARY.

MICHAEL J. CARTER, aged seventy-four years, a former alderman, and in his earlier days an operator for the Western Union Telegraph Company, died in Jamaica, L. I., July 23. He had charge of the work of installing the telegraph system between the life saving stations along the south shore of Long Island.

JOHN PITCAIRN, aged seventy-five years, founder of the Pittsburgh Plate Glass Company, and a former telegrapher on the Pennsylvania Railroad, died at his country estate near Philadelphia, Pa., July 22. He was a man of great wealth and had been identified with some of the most prominent enterprises in Pennsylvania, including the Pennsylvania Railroad and the Standard Oil Company. He was born in Scotland, and was a brother of the late Robert Pitcairn.

W. R. PATTERSON, aged sixty-two years, formerly plant engineer of the Western Electric Company at Chicago, died in that city July 19. He retired from the business seven years ago. Mr. Patterson developed the "Patterson" cable, which was for many years generally accepted in the electrical industry as the term descriptive of lead sheath cable, and he did much to bring the design and manufacture of cable to a high degree of perfection. He was graduated from Dartmouth College in 1876 and was one of the old school of Western Electric men.

Death of H. H. Ward.

Henry H. Ward, aged eighty-two years, a forty-niner of the telegraph, identified with the telegraph service for about sixty years until his retirement from the position of cashier and money transfer agent of the Western Union Telegraph Company at New York about twelve years ago, died in East Orange, N. J., July 16. After his retirement from the telegraph service he was associated with banking interests at East Orange. Infirmities of old age were the cause of death.

Mr. Ward was born at North Adams, Mass., and began his telegraph career in Springfield, Mass., in 1848 as a messenger. Later he was advanced to a position at Worcester, Mass., as messenger, battery man and operator, and as time passed he was given positions at various places, including Norwich, Conn., and New York. After three months in New York he was transferred to Boston, and soon after to Portland, Me., as manager. In the latter city, in 1850, he began receiving messages by sound, much to the astonishment of the superintendent.

In 1851 Mr. Ward was "first operator" in the Boston office, and in 1863 he returned to New York, to the office at 145 Broadway. He was assistant manager and manager of the general office of the American Telegraph Company until 1865, when he was appointed superintendent of the Metropolitan District.

In 1866 the Atlantic cable having been brought to successful operation, he was made superintendent of the company. In 1874 he became secretary and treasurer of the Gold and Stock Telegraph Com-

pany and in December, 1875, was made cashier and money transfer agent of the Western Union Telegraph Company at New York, which position he held for about thirty years and until his retirement.

Funeral services were held at his East Orange residence July 19 and were attended by many old-time friends and associates. Mr. Ward leaves a wife, two daughters and one son.

Death of Edward Payson Porter.

The death of Edward Payson Porter, a forty-niner of the telegraph, and one of the best known old-time telegraphers in the United States, which occurred at Asbury Park, N. J., April 26, marks the passing away of another brilliant operator. Mr. Porter was born in 1834 and began his telegraphic career as a messenger in 1846. After working as an operator at various places in New York State he took a position on the New York, Albany and Buffalo Line in New York, going to Buffalo later. In 1860 he went to Chicago for the Western Union and through his efforts the manager of the Western Union at Cleveland and the managers of the New York, Albany and Buffalo Company located at Utica, N. Y., connected the lines of the two companies at Buffalo by the use of a button repeater, and direct communication between New York and Chicago was established. Later Mr. Porter constructed the Metropolitan Telegraph Lines in Chicago, connecting with the United States Telegraph Company, and afterwards changing to the Western Union Telegraph Company, with which company he remained.

Mr. Porter was the first operator to use the typewriter in receiving messages; this was in 1869, while working in the Chicago office.

New Books.

EXPERIMENTAL WIRELESS STATIONS. By Philip E. Edelman. 272 pages; 98 illustrations. Published by the Author. Price \$1.50 per copy.

This book is intended particularly for experimenters in wireless telegraphy as a guide to a rational study of the art. One of the main objects of the book is to provide a standard design for so-called amateur stations, to take the place of the many varieties of hit and miss apparatus constructed and purchased by experimenters.

Experimenters who regard the art as more than a mere idle plaything will find this book a help, and it will serve as a stepping stone to a serious preparation for desirable positions.

The matter has been written with particular regard to clearness, simplicity and direct usefulness, and among the subjects covered are: Nature and theory of wireless transmission; aërials; grounds and lightning protection; general features of transmitters; resonance; calculation of wave length, capacity and circuits; transformers; spark coils; transmitting condensers; design and construction of spark gaps; detectors; solid rectifiers; tuning; interference prevention; rights of the experimenter, etc. A supplement contains much matter of value, which brings the book up to date and explains the

audion, time signals, balancing aërials, vacuum valves, amplifiers, etc.

This book is a distinct departure from the standards in book making in many respects, and one sensible thing about it is that references to the theory of electricity are omitted, nothing but practical matters being considered. It contains no mathematics.

Copies of this book may be purchased of TELEGRAPH AND TELEPHONE AGE, 253 Broadway, New York, at \$1.50 per copy.

HOW TO READ TELEPHONE CIRCUIT DIAGRAMS.

By David S. Hulfish. 257 pages; 570 illustrations. Electricity Magazine Corporation, Chicago. Price \$1.50 per copy.

To take up 257 pages of a book to tell how to read telephone circuit diagrams seems, to the layman, like a useless waste of space, but when one glances over the pages of this book the subject soon appears to be a more important and different one than is generally supposed.

The author shows by his masterly handling of his subject that he is in a position to know the importance of correct interpretation of diagrams, and it is evident that comparatively few know how to read a diagram or there would have been no call for such a book.

This work contains twenty-seven "Lessons"—usually called Chapters—and it is surprising how much interest can be woven in with such an uninteresting subject. In the teaching of diagram reading through this book much light is thrown upon the construction and arrangement of apparatus and taken altogether the book is worthy of a more attractive name.

Telephone subjects are principally dealt with, but a chapter, or lesson, is devoted to wireless telephone diagrams. The wide scope and utility of the book can best be shown by a list of the contents of the twenty-seven chapters:

Introductory. Classes of Diagrams. Wiring and Skeleton Diagrams. Symbols. The Telephone Receiver. Batteries. A Simple Circuit. Transmitters. Induction Coils. Repeating Coils. Switchhook and Hookswitch. Ringers. Condensers. Hand Generators. Substation Circuits. Switchboard Circuits and Symbols. Substation Symbols. Jacks and Plugs. Switches and Keys. Locking Keys. Electromagnet. Split and Differential Connections. Relays—Simple. Relays—Sluggish. Locking. Interlocking. Relays—Polarized. Reverse Acting. Vibrating. Relays—Alternating Current. Coherer. Speech Current. Switchboard Signals. Drops. Mechanical Visuals. Lamps. Message Registers. Power Plant Apparatus. Measuring Instruments. Rectifiers. Protectors. Electrical Units. Adjustable Dimensions. Potentials. Resistance. Inductances. Differentials. Capacities. The Artificial Line. Conductors. Currents. Coded Conductors. Labels. Skeleton Circuit and Wiring Diagram. Phantom Circuits. Composite Circuits. Intercommunicating Telephone Systems. Automatic Telephone Systems and Apparatus. Wireless Telephone Diagrams.

The Cornerstone of Ambition.

BY R. M. TELSCHOW, NEW YORK.

The present trend of business is along a highly scientific plane. Personal efficiency is the key which unlocks the golden gate of success to man or woman. In the professions, clear-visioned, highly trained specialists carry off the honors.

Diggers of ditches and huge armies of unskilled laborers march under the banners of indifference. The little fellow who looks at a beautiful piece of statuary and says "I'd like to model something as pretty as that," or admires a famous public building and vows to plan one even greater, is the boy worth while. The most futile, hopeless, woe-stricken, helpless chap is the one with a cigarette stuck in the corner of his mouth, surveying the topography of village, town or city six days each week from the seat of a butcher's cart with nothing on his mind but a skull as thick as a cocoanut and a tousled crop of unkempt hair. To drive a spavined horse and kick at the neighbors' dogs on his daily rounds constitutes the height of his ambition.

Wide-awake boys of today have far greater chances for a successful future than ever before in history. They have the alternative of entering a vocation requiring a few short years of preparation made easy for them by the infinite labor and painstaking efforts of many experts, or they may embark in a new science and by unstinting devotion reap undying renown by reducing it to the staid formulas and rules of older fields of endeavor. Those who would tread beaten paths secure the advantages afforded by knowledge gained through thousands of individual experiments and the concentrated thought of a legion of brainy men.

Ground yourself thoroughly in the principles of whatever business you seriously contemplate following, if you would ultimately reach the threshold of success. The marvelous alchemy which changes the ambitious schoolboy, plodding shoemaker, day laborer, bricklayer, carpenter, weaver, tailor, miner or telegraph operator into the celebrated writer, geologist, architect, mathematician, physician, electrician or scientist is self-help. Self-help is the cornerstone of ambition.

Sir Walter Scott, the famous English novelist, pursued for many years a routine of drudgery in a lawyer's office, but devoted his evenings to reading and study. Elihu Burritt, the "learned blacksmith," while working and earning his living as a smithy, found time during "odd moments," to master eighteen modern and ancient languages and twenty-two European dialects.

Examples of men and women who have risen from commonplace, obscure stations in life, to high positions of usefulness and influence in society through the timely realization of the value of spare time study are so numerous that it would be futile to attempt a general review.

Andrew Carnegie, the multi-millionaire, was once a telegraph messenger in Pittsburgh at \$2.50 per week. But rather than great wealth seek to develop a clean character, a noble purpose and an active mind directed along useful channels. Though

you may not become a modern Cræsus like Carnegie, you can perhaps accomplish something of benefit to mankind.

A career startlingly devoid of inaction and illustrating what is possible of accomplishment by a young man of average mentality and physique, minus ordinary petty vanities and plus assiduous application toward the consummation of a life ideal is furnished by the life story of Thomas Alva Edison. Edison began his famous career as a newsboy and later became an itinerant telegraph operator. He passed through many vicissitudes and had numerous misfortunes. Always a dabbler in chemistry and a ceaseless experimenter in electricity, his fertile mind, cultivated by constant study during spare moments, gave to the world the quadruplex system of telegraphy, acoustic telegraphs and telephones, electric railways, the phonograph, electric lighting and the kinetoscope, the original moving picture machine. His genius is apparently inexhaustible, over six hundred patents having been issued in his name, and he is still busily inventing new things. Some of the largest and most successful manufacturing institutions in the United States are monuments to the personal efficiency of the erstwhile newsboy.

It may be possible, in spite of all your efforts, that dame Fortune may refuse to flirt with you; that Fame persistently passes by your humble home without a recognizing smile. The habits accruing to an individual through well-directed study in spare moments more than repays him for the expenditure of the time and sacrifices he may make. He becomes a figure of importance in whatever circles his footsteps may carry him, by the practical knowledge and wisdom he is enabled to display.

Efficiency Engineering in the Telegraph Service.

(Continued from page 350, July 16.)

A manager recently stated that canvassing for business was being carried to extremes when people were informed that flowers could be sent by telegraph to distant points. This source of revenue would not yield the company \$2.00 per month per office. For that reason it was an unnecessary expense. That is precisely where the manager makes a great mistake. The head of an up-to-date telegraph office is not supposed to instruct the canvassers to drop everything else and center their efforts on educating the people in sending flowers by telegraph. This is only an incident in the telegraph service. It is no more necessary to spend any more time on a matter of this kind than it is in canvassing for larger returns. Every business has its limitations. A merchant knows just exactly what he can afford to expend in canvassing by telegraph for orders. He must not overdo it or he will disregard the very essence of efficiency.

All business can be developed and the telegraph is the best method to use in its development, because a telegram is prompt and accurate and reaches the party to whom it is addressed, no matter how busy he may be. The arrival of a telegram in any

business office is sufficient to warrant its immediate perusal. Not so with a letter, which lays unopened sometimes hours at a time. A telegram always disciplines a merchant.

A few years ago it was a common opinion in telegraph circles that the telegraph business had reached the limit of expansion, and that it was at a standstill. Those who held such a belief are now compelled to admit that they were very much in the wrong, and that the telegraph business is just as much alive as is any other progressive business.

It is now seen that the public had not been properly educated as to the great advantages the telegraph possessed for business and social correspondence, and the widening of its uses through the day and night letters and other special services has been a startling revelation to the old-timers. The enormous increase in the revenues of the telegraph companies as compared with what they used to be before the advent of the "efficiency era," tells the whole story.

The facts teach us how unsafe it is these days to make assertions that cannot be substantiated by facts, and that education is the best way to break down the barriers set up by ignorance.

A writer who has been in the telegraph service for some years states that the companies would do well to develop and introduce a merit system that would fit all telegraphic conditions. He points out as an example the case of a manager of an office who has been loyal and faithful to the company he served for many years. The superintendent, who is fully aware of his capabilities and had him in mind for promotion, dies, is transferred or is promoted; or he leaves the service entirely, with the result that the manager's previous years of hard work and his record are not known to the new appointee. The manager has to begin all over again, so to speak, in his work to make himself known to the new management. There should be some way of giving a man permanent credit for what he has done, and not lay him open to the danger of losing all he has gained by a change in management or any other condition over which he has no control. Efficiency in the service should be so extended that a newly appointed superintendent could look over his list of managers and note by means of a merit system the past record and capabilities of each. He should be able to tell at a glance what the manager's percentage is in collecting promptly outstanding accounts, how many law suits or other legal disputes are charged to his management, what percentage of business to population he secures. It ought also to be noted if his force is considered efficient and a credit to the service at large, and if the relations between management and employes as well as the public are all that could be expected. These conditions may look difficult to attain but they are not. It is simply a matter of method and discipline. Discipline without method is time wasted. Each must dovetail with the other.

A superintendent under these conditions would know every good man in his district, and the abilities of all of them. He could tell at a glance if

there were any misfits and he would know who was entitled to promotion.

We have often been informed by superintendents and other officials that in districts that were mentioned a capable man could not be found to fill a certain position. Now we will ask all candid readers if the reflection is on the men or on the method of keeping account of their good qualities and their shortcomings.

We know of another superintendent who has an efficiency system in vogue in his district and is able to supply other districts with available material to fill positions of chief operators and managers. In other words, he knows his people. He not only is training them but he is keeping a close watch on their development. It does not annoy him in the least to have three or four of his men promoted and transferred from his district. He rather rejoices at their advancement. He knows that he can create good local officials much faster than he can take care of them by promotion in his own district and is therefore only too glad to have outside districts aid him in boosting to the front his worthy people.

No manager, chief operator, operator or anyone else identified with the telegraph, telephone or railroad service should suffer because those to whom he reports do not know or see him. The company's records should be so complete as to prove a stumbling block in the path of these officials. The records ought to stand out so boldly that they could not be pushed aside. In fact, they ought to be made public by circular or otherwise, so that every employe may know the position he occupies and his chances of promotion. It should not be possible to rob him of any credit to which he is entitled.

In one of the large telegraph offices when an operator resigns the acceptance of his resignation gives his record during the term of employment. It states how many messages he is capable of handling per hour or per day and the number of errors he has made, if any. He realizes that the record is correct and if it is a good one, he does not hesitate to show it to a prospective employer. Extend the same principles of efficiency to cover the positions of traffic chiefs, wire chiefs, chief operators, supervisors, managers and superintendents and an ideal system of efficiency will obtain. If an operator is handed his record as a recommendation for future employment, why should there not be a record on the books of the company according to a properly worked out merit system to every position within the gift of the company. Presidents, general managers and general superintendents can make mistakes just as well as operators. The difference is that their mistakes are perhaps more costly. The problems that they have to meet and solve involve great questions at issue. These questions have to be studied from every angle. This is mental work and it requires a well balanced mind and cool judgment to reach a decision in the interest of all concerned.

(To be continued.)

Cheerfulness and good-will make labor light; discontent makes it burdensome.

Questions to be Answered.

[The following questions are based upon the contents of Jones' "Pocket Edition of Diagrams and Complete Information for Telegraph Engineers and Students," and have been prepared for the study of this book. The asking of questions to be answered by the student is an excellent method of acquiring information, besides cultivating the habit of concentration of thought which is so essential in the study of any subject. Every telegrapher who is desirous of learning the technical side of telegraphy should follow this method of instruction diligently. He will be surprised to note from time to time how his knowledge is increasing and this almost without effort on his part. This book is sold by TELEGRAPH AND TELEPHONE AGE at \$2.00 per copy.]

How are selectors operated? (page 336)

How are signals transmitted over the line to operate a selector?

How are the signals composed?

Why do selector combinations always begin with six dashes and end with one dash?

What are the combinations called?

For what purposes are selectors used?

Is it possible to operate selectors by hand instead of using the breakwheel?

To what other uses are selectors applied?

What is the Varley loop test? (page 338). How are circuits arranged to make the Varley loop test?

Who was the pioneer in the practical application of the storage battery system to telegraph work? (page 348).

What is a storage battery?

What is the difference between a primary battery and a storage battery? (page 349).

How did Faure improve the Planté accumulator?

When a current of electricity is made to pass through a secondary cell what action takes place?

How is the storage battery employed to utilize waste currents? (page 350).

How is a storage cell charged from a loop current?

How does a storage cell at a branch office receive its charge over a duplexed wire? (page 352).

In calculating current for sounders supplied by storage batteries how much current is usually allowed for each sounder?

Upon what does the life of a storage battery depend?

When worked to an average of about 80 per cent. of its full capacity how much service from a storage cell is it safe to count on without attention?

What charging rate is ample to maintain the required strength of a quarter of an ampere when the storage cell supplies only one sounder?

What is the usual method of charging storage batteries in small towns? (page 353).

Are the currents received over main line wires strong enough to charge storage cells?

What method is employed at intermediate offices to charge a storage cell?

What kind of circuits are used for charging storage cells in intermediate offices

How would you estimate the amount of current required to operate a local circuit?

(To be continued.)

Reinforcing Wooden Poles.

A process for reinforcing wooden poles weakened at the ground line by decay has recently been patented. With this system it is first necessary to remove the earth around the pole to a depth of about four feet. The rotted portion of the pole is then removed and the healthy wood surface thus exposed is treated with a preservative which will prevent the pole from absorbing moisture. Sixty-penny spikes equipped with stamped metal clips are then driven into the pole. The reinforcing rings and stay rods, which are made of $\frac{3}{8}$ -inch corrugated iron bars, are placed around the pole and are supported by the spikes. A collapsible steel form is then placed around the pole so that its interior rests against the heads of the spikes, and the concrete is poured into this form. It is stated that the process of placing the form on the pole can be very easily completed in eight minutes. When the concreting process is nearing completion, a narrow piece of rubber belting or some other such elastic material is placed in the concrete at the point where the top of the concrete would otherwise touch the wood. When the work is finished this piece of belting is removed, and the open space left in the concrete is then filled in with a water-proof compound which permeates the wood and effectively seals the joint.

New Book.

THE ENGINEER IN THE WAR. By P. S. Bond, Major, Corps of Engineers, U. S. A. 187 pages; 70 illustrations. New York: McGraw-Hill Book Company. Price \$1.50, net.

This book will be read with much interest at this time when Europe is torn by war. Engineering, the author states, plays so important a part in all the operations of warfare that it is perhaps no exaggeration to say that modern war is an application of engineering science to the armed conflict of states.

In this volume is presented a brief outline of the relation of engineering to the conduct of war and the adaptation of the principles and practices of civil engineering to military requirements.

A subject that will be found of special interest is the description of the German military system.

The scope of the book is wide, covering every detail of military engineering, but the descriptive matter is necessarily very brief in a book of this small size. The main points, however, are clearly stated, and give a general outline of military practice in peace and in war.

The book gives an idea of how modern warfare is conducted and for this reason it will no doubt meet with a ready sale.

Copies of this book may be obtained of TELEGRAPH AND TELEPHONE AGE, 253 Broadway, New York, at \$1.50 per copy, net.

HOW PENSIONERS PASS THEIR TIME.—A correspondent wishes to know what becomes of the large number of telegraph pensioners, and how do they spend their time. As far as we know many of them become farmers or fishermen.

Convention of Rotary Clubs.

The International Convention of Rotary Clubs, held in Cincinnati, July 16 to 20 inclusive, brought together prominent representatives of the Western Union Telegraph Company from the Eastern, Western, Mountain and Gulf Divisions.

On the evening of July 18, the visitors were the guests of Superintendent A. A. Montgomery, of the seventh district, at a dinner given in the rooms of the Cincinnati Automobile Club at the Hotel Gibson, which was followed by a business session and during which a full and free discussion of fundamentals one and two and development work in general was entered into with great enthusiasm. Superintendent Montgomery acted as chairman and called upon General Commercial Agent A. C. Kaufman of New York, who spoke closely along the subject lines in his own particularly delightful and interesting manner. He was followed with short addresses by Division Commercial Agent A. R. McGrath; Division Cable Agent C. J. Eldridge; Division Auditor W. McD. Milne and Division Traffic Superintendent T. W. Carroll of Chicago; Superintendents J. F. Nathan of New York, and J. C. Nelson of Indianapolis; Division Commercial Agent J. E. McLemore, Dallas, Tex., and Manager W. C. Carswell, Topeka, Kan., the last named being chairman of the telegraph section of the International Rotary Clubs.

Others present were former Superintendent I. N. Miller, Cincinnati, Division Traffic Supervisor M. D. Combs, Cleveland, Ohio, Chief Operator W. E. Lukens, and Assistant Chief Operator B. C. Chenal, Cincinnati, Ohio, District Commercial Manager J. Fitzpatrick, Detroit, Mich., District Commercial Manager A. L. Buchanan, District Commercial Agents E. H. Cost and C. E. Glaser, Cincinnati, Ohio, Managers H. F. Taff, Washington, D. C., L. A. Ott, Dallas, Tex., J. F. Reade, Denver, Col., C. A. Crane, St. Paul, Minn., J. R. Hyland, Omaha, Neb., A. C. Farmer, Fort Worth, Tex., A. A. Patterson, Bay City, Mich., J. F. Simons, Worcester, Mass., C. B. Foster, Moline, Ill., E. W. King, Quincy, Ill., B. J. Ross, Cleveland, Ohio, C. H. Cadwallader, Toledo, Ohio, A. A. Brown, Columbus, Ohio, C. E. Jones, Dayton, Ohio, E. L. McQuiston, Canton, Ohio, R. E. Scoriah, Hamilton, Ohio, E. C. Lay, Middletown, Ohio, and L. R. Scholl, Cincinnati, Ohio, together with twenty-five local branch office managers and commercial department employees.

The meeting was a most enthusiastic one, the majority of those present taking part in the various discussions, and was continued until 11:30 p. m. when, because of the lateness of the hour, it was declared adjourned, to the very apparent disappointment of all, despite the hour and the oppressive heat, the suggestion being offered that the hands of the clock be turned back in order that the discussions might be prolonged. Everyone present entered into the spirit of the occasion with the utmost enthusiasm, and upon the meeting being adjourned, a hearty three cheers and a tiger were given for Cincinnati and the seventh district.

TELEGRAPH STATISTICS.—According to recent statistics the Western Union Telegraph Company has 210,515 miles of pole line; 1,581,571 miles of wire; 39,468 employes and 25,784 offices. The company operates eight trans-Atlantic cables and two cables to Cuba, and it handles over 125,000,000 messages per year.

BEST POSITION OF BATTERIES IN CIRCUIT.—If the insulation of a line were perfect at all times, the position of the battery in the line would be immaterial. As all lines are ordinarily subject to more or less escape or leakage throughout their length it is obviously not advisable, except upon comparatively short lines, to place all the battery at one end; for in such case the signals will be received with much more difficulty at the station where the battery is situated, than at the opposite end of the line. The usual arrangement of a battery at each end is altogether preferable.

EFFECT OF IMPERFECT INSULATION UPON FLOW OF CURRENT.—The effect of imperfect insulation upon the line, whether general or special, is to largely reduce the resistance of the line, and proportionately increase the quantity of current drawn from the batteries by the line, so that the latter are exhausted much more rapidly when the weather is wet. Hence, in working on the closed circuit plan, the line current is strongest in wet weather except near the middle of the line; but the variation or margin at any station, when the key is alternately opened and closed at another station, which constitutes the working efficiency of the line, is very much diminished. This variation or difference of course determines the available strength of signals.

THE TELEGRAPH AND TELEPHONE LIFE INSURANCE ASSOCIATION has levied assessments 606 and 607 to meet the claims arising from the deaths of A. G. Cole, Old Chatham, N. Y.; F. Stone, Nakusp, B. C.; E. P. Porter, Asbury Park, N. J.; R. G. Troll, St. Louis, Mo.; C. F. Thomas, Winona, Minn.; Wm. E. Huntoon, White River Junction, Vt.; E. R. Edwards, Washington, D. C.; J. Fothergill, Honolulu, H. T.; W. M. Hobbs, Chicago, Ill.; E. T. T. Adams, Philadelphia, Pa.; A. B. Weaver, Buffalo, N. Y.; W. J. Cochrane, Montreal, Que.; W. T. Mapes, Morris Plains, N. J.; J. L. Hall, New York.

THE SERIAL BUILDING LOAN AND SAVINGS INSTITUTION of New York, organized and managed by telegraphers and telephonists, on July 1 distributed dividend checks covering six months' interest on approximately \$1,000,000. This vast sum represents the savings of telegraph and telephone employes. The Institution has declared regularly without interruption an annual dividend of not less than five per cent. since it was organized about thirty years ago. It is one of the soundest financial institutions of the kind in the United States and every member of the telegraph and telephone industries who have ever been members is proud of its record. Many telegraph and telephone pensioners today find

that the interest accruing from savings invested in the Serial Loan Institution keeps them supplied with extra money with which they are enabled to further enjoy life. At the same time the Institution has taught thousands of members of the telegraph and telephone professions how to systematically save money. Many small fortunes in the possession of telegraph and telephone people today had their beginning in this splendidly organized savings institution.

INDUSTRIAL.

Business Opportunities.

It is conceded on all sides that a good reliable word counter is an imperative necessity. Many inventors have endeavored to produce a satisfactory word counter, but we do not think that the problem has ever been attacked from the electrical standpoint. It would seem to us that a word counter electrically operated would better meet the exacting requirements of such a device.

The Dunduplex Transmitter.

Thomas J. Dunn, whose advertisement of the Dunduplex Transmitter appears on another page of this publication, has devoted the last twelve years of his life to the study of mechanical transmitting devices. No one in this country with, perhaps, the exception of Mr. Horace G. Martin, better understands the telegrapher's needs in the way of a mechanical transmitter to lessen his labor and at the same time to protect his arm from paralysis, the dread disease of all operators. Mr. Dunn is firmly convinced that his latest model, the Dunduplex rubber cushion, protects the arm from the pounding and nerve shattering metallic jars. This is the first time that a rubber cushion has been used for such a purpose and, as Mr. Dunn puts it, it is strange that it was not thought of years ago, as the rubber positively absorbs the mechanical jars, thus rendering indefinite the life of the arm and the accuracy of the touch and manipulation of the key. In other words the rubber contact eliminates the metal-to-metal contact, which as a matter of course must minimize injury to the nerves. It also provides a featherweight touch that lightens the work and is not a drag on the operator's energy, thereby lengthening the life of his grip. In conserving one's energy, life itself is naturally preserved. Operators suffering from paralysis, we are told, will find this very useful instrument beneficial to them to the extent that it will place them once more among the gilt edge telegraphers of today. Mr. Dunn claims that the quality of the Morse that flows from a Dunduplex is extraordinarily perfect.

It is the only transmitter in the world's history that has two movements—vertical and horizontal—the latter being operated by a single lever. It is very simple in design, quickly and easily learned and absolutely reliable under all wire conditions. A single contact screw is the only adjustment necessary to meet any change in the conditions of a long or short distance circuit.

The demand today is for speed and accuracy, which makes it imperative for operators to study this new method of transmission, if they hope to be placed on an equal footing with their more fortunate companions who have mastered the sending machine.

The Dunduplex is a boon to the "broken down" sender, but is infinitely more valuable to the expert, because it conserves the skill he has and gives him an alternate method of sending which is practically free from fatigue. So easy-working is its mechanism, so quick its action, that the terrible strain of hand sending is greatly decreased and the operator is relieved of the muscular effort that makes him a victim of nervous troubles, destroys the use of his arm and hand, makes him old before his time, forces him out of a good position, which he secured at the expense of a lifetime of ambitious toil, and reduces his earning capacity at an age when he should be at his best.

Orders for these transmitters may be sent to the manufacturers, Thomas J. Dunn and Company, 1 Broadway, or to TELEGRAPH AND TELEPHONE AGE, 253 Broadway, New York. The fact that this publication has agreed to sell these devices is sufficient guarantee that the instrument will do all that is claimed for it.

LETTERS FROM OUR AGENTS

NEW YORK POSTAL.

Assistant chief operator August Bitter, who had charge of Southern traffic nights, died suddenly July 10. Mr. Bitter first entered the service of the Postal on April 27, 1896, and was known as a conscientious worker and possessed a congenial disposition. He was 46 years of age.

General traffic chief John J. Fredericks is enjoying his annual vacation. General quad chief McKiernan is looking after the traffic desk during the absence of Mr. Fredericks.

Wire chief William J. Kavanagh returned from his vacation and reports some fine trolleying in Long Island, Staten Island, New Jersey and Westchester.

Operator Harry Trotsky, accompanied by his wife, is spending his first vacation in many years at the Delaware House, Lackawaxen, Pa.

Operators P. C. Bowling and A. DiCorcia have been transferred to the branch office at the Cotton Exchange.

Among recent appointments are: R. C. Speer, J. J. Brady, A. J. Sparks, L. Izenskie, M. C. Williams, J. F. McHugh, R. M. Prendergast, W. A. Yoell, W. R. Roche, B. F. Durand, J. A. Gleason, Jesse S. Stephens, J. Valcourt, W. T. O'Keefe, T. L. Myers, F. E. Rinehart and D. C. Maynard.

Operators who resigned were W. A. Allison, J. J. Roche, R. A. English, E. Becker, B. Mendlinger, C. H. Faulkner and J. B. Martin.

NEW YORK WESTERN UNION.

Hereafter the operating room at 24 Walker Street will be known as the New York Main Office instead of the general operating department.

J. P. Edwards, division traffic superintendent, New York City Division, who has just been appointed division traffic superintendent with head-

quarters at Chicago, to relieve T. W. Carroll, appointed general manager at New York, has been in Chicago for a few days to get acquainted with his new surroundings. Before leaving New York permanently a testimonial farewell dinner will be tendered to Mr. Edwards, in which it is expected all with whom he has had dealings with in the past will participate. Mr. Edwards assumes the duties of his new office in Chicago with the best wishes of his New York friends.

G. E. Palmer, chief operator, has returned from vacation. During his absence the duties of his position were very ably handled by H. M. Heffner, assistant chief operator, Commercial News Department.

John Casper, chief clerk to division traffic superintendent B. P. Hancock, Dallas, Tex., and a son of Louis Casper of the vice-president's office, has been transferred to New York, where he will remain permanently.

Assistant chief operators A. M. Lewis and C. S. Pike have furnished their quota to the National Guard. The former's son is a sergeant of engineers, and the latter's son, second officer in the Connecticut Cavalry. Both Mr. Lewis and Mr. Pike are themselves veterans of the guard.

Michael J. Donaghy of this office is with the Machine Gun Detachment of the 69th Regiment, New York National Guard, at Pharr, Tex.

George B. Daniels, operator, is at present doing his "bit" at the front with the 7th Regiment, New York National Guard in Mexico.

The Commercial News Department has made a valuable acquisition in the person of J. H. Hawthorth, formerly supervisor of the Jerseys now appointed supervisor in the Commercial News Department.

B. F. Griffith, supervisor, Jersey Division, has been transferred to the office of J. P. Edwards, division traffic superintendent.

Cupid has again been busy in this office. The victims are: Miss E. Seeger, assistant chief operator, telephone department, and George B. Wallace of the equipment department, married May 2; E. Gregorovius, operator, and Miss Lottie Blois of the clerical department, married December 11 last. Both affairs were kept very quiet, the news having just leaked out. Wm. J. Keegan has also succumbed to the wiles of cupid. He was married June 1.

Patrick Reilly has been assigned to the multiplex department. Mr. Reilly was formerly employed at the main office, 195 Broadway, and now returns to us from the Gold and Stock Telegraph Company's service.

J. Frank Howell, the old-time telegrapher of New York, now a Wall Street broker, is in receipt of a letter from George E. Holbrook, now of Wagner, Mont., but prominent in telegraph circles in this city thirty or more years ago. When the *New York Times* office was located on Park Row Mr. Holbrook, together with the late Robert W. Martin, had charge of the telegraph bureau of that publication. Mr. Holbrook was a very excellent operator and his copper plate copy was

much admired in those days. He has been a resident of Montana for many years.

Morse Electric Club Outing.

The Morse Electric Club held its summer outing at Munger's-on-the-Beach, New Dorp, Staten Island, N. Y., July 15, about 150 persons being present. The afternoon was cool and all enjoyed the grateful change in temperature after the several preceding hot days.

A game of baseball was played by the Western Union All Stars and the Traffic department teams, and was won by the former with a score of 10 to 0.

After the baseball came various running races.

The 75-yard dash, for members, was won by E. D. Pitt, C. J. De Lacy, second, L. C. Boochever third.

75-yard dash, open, won by J. McCree, A. Lombardi second, J. A. Fay third.

Fat men's race, won by L. Schmich, P. C. Lawrenson second, J. S. Skidmore third.

100-yard dash, for members, won by C. J. De Lacy, W. R. Wilcox second, W. C. Merly third.

100-yard dash, open, won by A. F. Lent, J. McCree second, A. Lombardi third.

Quarter-mile relay race won by the division traffic team over the division auditor team.

Mr. Joseph W. Connolly acted as clerk of course, and R. J. Murphy as starter.

At the conclusion of the games dinner was served in the large dining hall, after which prizes were drawn.

PHILADELPHIA POSTAL.

Business continues brisk here and operators on the waiting list are making good time. Among the additions to our force are T. L. Tyson, L. J. Floum, D. D. Stansell, George Osgood and W. A. Dryden.

The following appointments have been made in Manager J. H. Wilson's office: David Logan, formerly chief clerk to Mr. Wilson, has been appointed solicitor; A. J. Ellis is now chief clerk, Victor J. Feola succeeding Mr. Ellis as ledger clerk, with W. J. Doyle as assistant. P. Peters has been transferred to night counter clerk.

Miss Winnifred Applegarth has been appointed to the telephone department.

Miss N. McGonigle, operator Fifth and Chestnut streets office, has returned to duty after several weeks of illness.

By the prompt and efficient service of our burglar alarm department a number of "attempted robberies" were frustrated during the month of July. Wm. Miley is day manager and A. F. Reed night manager.

John J. Condon has been appointed operator in charge of our interests at the Philadelphia *North American* office. Mr. Condon was formerly manager at the Philadelphia *Press* office and is well qualified for this work.

J. H. Ryan has been added to the Atlantic City office force to help out during the heavy season.

Among recent visitors were chief operator J. H. Gingrich at Harrisburg, Pa., and Chas. Spindler, station man at Parkersville, Pa., on company business.

Quad chief C. A. Currier is spending his vacation at Asbury Park, N. J.

M. J. Hassen, chief clerk to general foreman Gorsuch, has returned from a trip to Lancaster, Pa., and Washington, D. C.

Operator F. S. Barrett, first Cleveland circuit, is enjoying a vacation with his family near Sunbury, Pa. H. L. Eastman has been assigned to this circuit during his absence.

On the first New York printer circuit recently 1,486 telegrams were handled in nine and three-quarter hours. Miss Olga Falcon and Miss Catherine Bruckler handled the Philadelphia end of this circuit.

The Postal Telegraph Baseball Team is continuing its season. While it has not been so fortunate in winning games, it is getting some fine training and is rounding out into good form for next season. Clarence H. Krewson is manager, while William G. Kurtz is captain.

PITTSBURGH WESTERN UNION.

Officials of the Western Union Telegraph Company held a conference on July 13 at the Queen City Hotel, Cumberland, Md., with A. C. Terry, superintendent, presiding. The object of the meeting was to discuss ways and means for the betterment of the Western Union service and to demonstrate to the managers present the scientific salesmanship of telegraph service. Those in attendance were: A. C. Terry, superintendent, Pittsburgh; John Simmonds, division commercial agent, New York; T. J. Jones, district cable manager, Pittsburgh; L. A. Watson, commercial agent, Pittsburgh, and the following managers: W. S. Grimes, Elkins, W. Va.; Geo. Demmer, Meyersdale, Pa.; W. G. Brallier, Connelville, Pa.; M. J. Kean, Keyser, W. Va.; B. M.

Krause, Martinsburg, W. Va.; A. Baird, Romney, W. Va.; L. W. Ronemus, Charlestown, W. Va.; G. E. Pearce, Frostburg, Md.; E. J. Noon, Piedmont, W. Va.; H. C. Dunning, Uniontown, Pa.; B. R. Kramer, Buckhannon, W. Va., and P. A. Nicklin, J. L. Snyder, R. J. Reuschelin, A. F. Coulehan, P. L. Ward, M. F. Fuller, A. G. Arthur, J. H. Nicklin of the Cumberland, Md., office.

WASHINGTON WESTERN UNION.

Chief operator W. H. McKeldin has returned from his vacation.

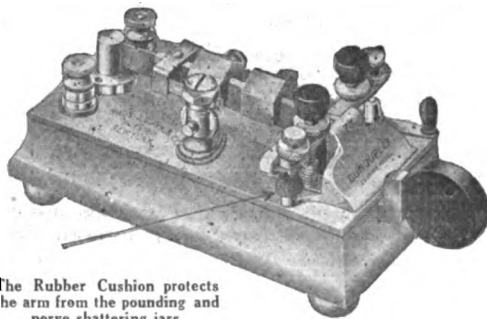
Norris Young has been on sick leave for three weeks.

George Diven, night chief operator, has been ill for the past month. Henry Pfaff substituted in his place.

Fred Harvey cutter, son of W. B. Harvey cutter of this office, met with a serious accident recently but is reported improving.

Mr. J. B. Austin, a well-known Washington, D. C., Western Union operator, has retired from active service and will hereafter reside in South Bend, Ind. Mr. Austin was in charge of the office at the Capitol in 1870 and in 1909, forty years later. He covered the national convention which nominated General Grant for president, and sent some of the bulletins announcing the shooting and the subsequent death of President Garfield. He also received some of the early bulletins on the shooting of President McKinley. He went with the United Press in 1883 and remained with it until 1897.

Conserve Your Energy —Save Your Health



The Rubber Cushion protects the arm from the pounding and nerve-shattering jare.

We beg to announce our new Dunduplex Cushion Device. The first time that this method of preventing nervous strain has been embodied in a telegraph key.

The Dunn Shock Absorber eliminates metal-to-metal contact with the aid of a rubber cushion stop that absorbs the jolts, thus minimizing injury to the nerves. It also provides a featherweight touch that lightens the work, and is not a drag on the operator's energy, thereby lengthening the life of his grip.

A postal card will bring Booklet

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NEW YORK**

32d YEAR

Serial Building Loan and Savings Institution

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Resources	- - -	\$950,000
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*Conducting business under the provisions of the
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Every wage earner should save some portion of his or her earnings, otherwise nothing will be accumulated to care for the future. **Resolve to make a beginning.**

Western Union Building, 16 Dey Street, 9 a. m. to 5 p. m.
Postal Building, 253 Broadway, Room 1030, 2.30 to 4.30 p. m.,
Fridays, and each 15th and last day of month.
Telephone Building, 24 Walker Street, Room 1129, Daily
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Rubber Telegraph Key Knobs.

No operator who has had to use a hard key knob continuously should fail to possess one of these flexible rubber key caps, which fits snugly over the hard rubber key knob, forming an air cushion. They render the touch smooth and the manipulation of the key much easier. Price, fifteen cents. J. B. Taltavall, TELEGRAPH AND TELEPHONE AGE, 253 Broadway, New York.

ASSOCIATIONS AND ORGANIZATIONS.

The Old Time Telegraphers and Historical Association, Andrew Carnegie, president; F. J. Scherrer, secretary, 30 Church St., New York. All Old Time Telegraphers who are eligible for membership are requested to send for application blanks. The next reunion will take place in New York City, September 26, 27 and 28.

Association of Railway Telegraph Superintendents, M. H. Clapp, president W. L. Connelly, Gibson, Ind., secretary and treasurer. Annual meeting, Washington, D. C., September 18, 1917.

MORKRUM COMPANY TELEGRAPH PRINTERS

717 Railway Exchange, Chicago

Classified and Want Advertising Section

Advertisements will be accepted, for this department of the paper, at the rate of five cents per word.

Post office or express money orders, checks or drafts may be made payable to Telegraph and Telephone Age when ordering goods advertised in the classified columns. They will be endorsed and turned over to the proper party when the goods have been shipped to those ordering.

Our Subscription Department

This publication is prepared to handle subscriptions for any paper or magazine published. Our friends can hereafter look upon TELEGRAPH AND TELEPHONE AGE as a clearing-house for all journals no matter where printed. Address and make remittances to TELEGRAPH AND TELEPHONE AGE, 253 Broadway, New York.

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It is fair, upright and fearless and stands high in the estimation of telegraph and telephone officials and employes alike, and is read all over the world.

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FOR TELEGRAPH, TELEPHONE, ELECTRIC LIGHT,
X-RAY EXPERIMENTAL AND WIRELESS SYSTEMS

Sending Condensers for Wireless made to stand any voltage required. Standard Condensers a specialty. These Condensers are used in all Telegraph offices in America where Standard and ordinary Condensers are required.

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Reserve Fund, . . \$345,000

Insurance \$500—\$1000—\$1500

The Association was instituted to furnish pure life insurance to all engaged in telegraph and telephone service, to take the place of "passing around the hat" which was very expensive and besides barely provided funeral expenses.

It has paid families of deceased members \$2,000,000. You should be a member. Fill in attached coupon and mail to Secretary.

"Mr. E. F. Wach our representative at Chicago in six weeks secured seventy applications for membership and has fifty more ready to close. He expects to obtain three hundred new members during the coming year."

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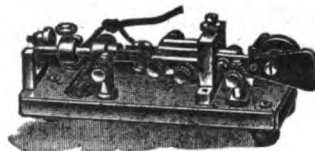
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A Model of Beauty and Efficiency

The No. 4 is less than half the size of the Old Style Single Lever, and weighs only two and one-half pounds.

Handsomely finished in nickel plate with an attractive base of blue enamel . . \$12.00
Nickel-Plated Base 14.00



A marvel of speed, smoothness of action, and ease of manipulation. Made especially to meet the demands of that large army of telegraph operators who desire a small, light-weight, but efficient sending machine. The same sending possibilities, the same carrying qualities that characterize the work of the Martin Vibroplex, together with the same strength and durability, are found in the Vibroplex No. 4.

Old Style Japanned Base (Single Lever) \$12.00
Nickel-Plated Base 14.00

THE VIBROPLEX CO. Inc.,

J. E. ALBRIGHT, General Manager.

Martin Vibroplex and Mecograph Transmitters
253 BROADWAY NEW YORK

Telegraph and Telephone Age

253 BROADWAY
NEW YORK

J. B. TALTAVAL
Publisher

ESTABLISHED 1883

Issued on the 1st and 16th of each month

Price, \$2.00 Per Year

No doubt you are aware that TELEGRAPH AND TELEPHONE AGE is the only publication in this country devoted exclusively to the interests of the telegraphs, the telephones, wireless telegraphs and submarine cables. In the pages of this magazine are recorded the activities of the different societies, associations, clubs, etc., both social and official, connected with the various companies.

Our correspondents and agents all over the United States and Canada and throughout the world secure for us the facts of all the important events connected with these industries, so that we are enabled to present them to our readers in a clear and concise manner.

The value of the magazine does not end here, however. We have special articles for the thinker; those who wish to advance themselves in their respective line of employment.

The following partial list of contents gives a slight idea of the advantages to be gained by a subscription to this paper. These items appeared in the year 1915. They were carefully prepared by writers of acknowledged ability, and are scientifically correct:

The Alternating Current Phase of the Telegraph, C. G. Allen; Some Primary Battery History, D. McNicol; Wet Batteries and Their Uses, J. C. Wright; Instructions for the Installation and Maintenance of Caustic Soda Cells, W. E. Harkness; Application of Science to Telephone Engineering, G. S. Macomber; Dynamos and Motors, J. F. Skirrow; Radio Telegraphy and Telephony for Railroads, J. L. Hogan, Jr.; Relation of the Law to the Telegraph, F. R. Stark; Pole and Wire Maintenance, E. H. Ward; Early Telegraph Tariffs, B. B. Adams; Developments and Opportunities in the Philippines, S. W. Beach; The Field for Printing Telegraphs in Railroad Work, J. O. Carr; Screened Cable Conductors and Their Application to Telegraph Service, R. E. Chetwood; Reducing Economic Waste, C. R. Fische; Reminiscences of the Civil War, Dr. W. D. Gentry; Local Distribution of News by Printing Telegraph, J. G. Randolph; Assassination of President Lincoln, David Homer Bates and Geo. C. Maynard; Earth Currents Mistaken for Induced Alternating Currents, J. B. Taylor; Transferring Cost of Efficiency, S. S. Scothorn; Valuable Engineering Articles; Wireless Rescues and Safeguards; English vs. American Telegraph Service; Telephone Trouble in the Tropics; Morkrum Printing Telegraph System (detailed illustrated description); The Western Union Multiplex System (detailed illustrated description); How American Notes Are Sent to Germany; How Submarine Cables Are Made, Laid, Operated and Repaired; Early Telegraph Days in Canada, by R. F. Easson, and hundreds of other interesting and important items.

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It is safe to state that so complete a work on practical telegraphy was never previously produced. It is the standard work of reference in America. It is authoritative, the assistance of the officials and engineers of the telegraph, wireless and other companies having been secured in the preparation of the descriptive matter and the illustrations.

Telegraph engineers, railroad operators and students will find that a copy of this book will be indispensable. The vast fund of information that has been provided is surprising, and the book will be a rich possession to every progressive telegraph and railroad man who wishes to know how to manage switchboards and test for wire trouble. Price, \$2.00 per copy.

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A CORRESPONDENCE SCHOOL COURSE.

The correspondence-school lessons in elementary telegraphy which were published in serial form in the columns of TELEGRAPH AND TELEPHONE AGE from October 16, 1911, until April 1, 1914, have been published in book form and the volume is now on sale. The book contains 197 pages and is of a convenient size to carry in the pocket.

It is a valuable addition to telegraph literature and no other work covers the field as it does. As its name implies, it is a course of instruction in the elements of practical and technical telegraphy and during the time of its publication in the columns of this journal great and wide interest in the subject was manifested. Its instruction has started many ambitious telegraph and telephone employees on careers of greater usefulness to the companies employing them as well as to themselves.

The first chapter begins with the simple mathematics applicable to telegraph engineering and then follow chapters on potential, current and resistance, gravity battery, circuits, Ohm's law, wire resistance, fall of potential, derived circuits, battery arrangement, magnetism, electro-magnetism, self-induction, the induction coil, the relay, the local circuit, the key, Morse circuit, earths, switches and switchboards, single circuits in bad weather, line leakage in bad weather, static induction, testing at terminal stations, wire testing at intermediate offices, the detector, the milliammeter, the voltmeter, automatic repeaters, the condenser, the polarized relay, the rheostat, Stearn's differential duplex, the polar duplex, the quadruplex, neutral relays, relay and circuit relationship.

From this list of subjects the worth of the book may be easily appreciated. Test questions are given throughout the book for review purposes. Taken altogether, this work is as unique as it is important and really constitutes a class in itself. Every telegrapher and telephonist should possess a copy, as in numberless cases it will mean the beginning of a larger life of usefulness.

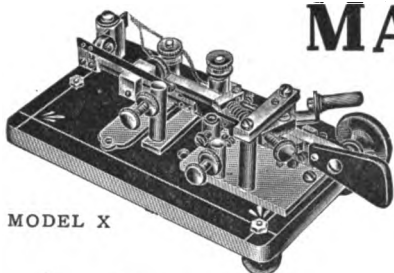
The price of the book is \$2.00 per copy. Remit by post-office or express money-order to TELEGRAPH AND TELEPHONE AGE, 253 Broadway, New York.

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THE CLIMAX IN TRANSMITTER DESIGN

Single Lever, Single Contact

MODEL X



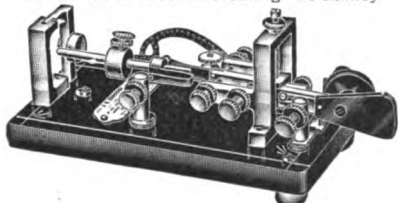
Japanned Base \$12.00
Nickel Plated Base..... \$14.00

Carrying Case \$ 2.00
With lock and key, 50c. extra.

What the Expert Hand-Sender Can Do You Can Do—With a Vibroplex.

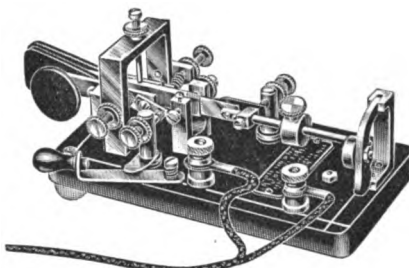
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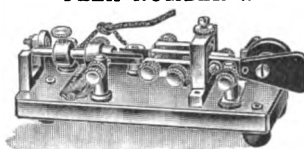
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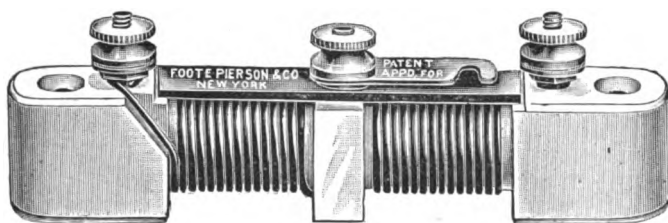
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No. 17.

NEW YORK, SEPTEMBER 1, 1916.

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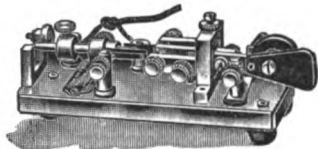
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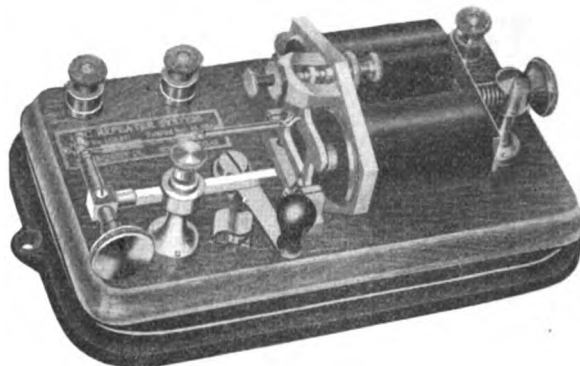
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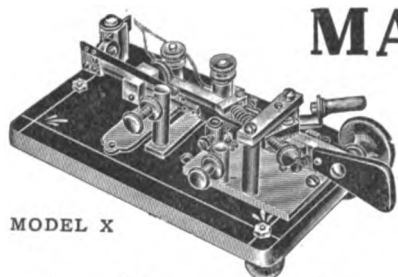
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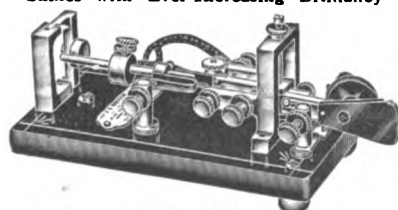
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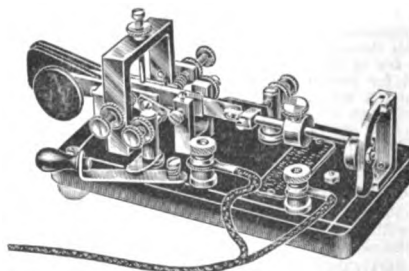
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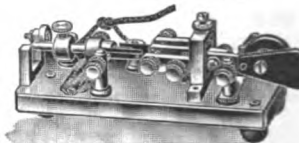
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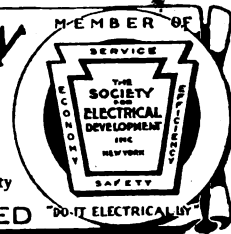
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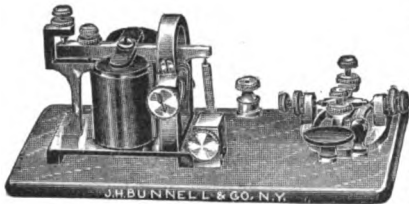
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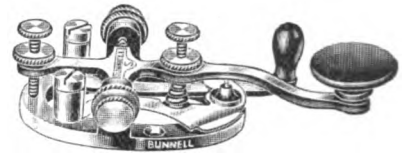
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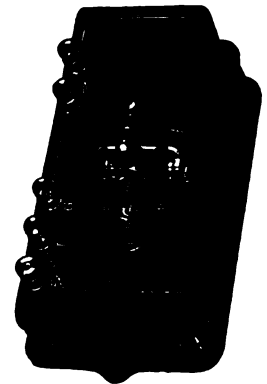
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No. 24.

NEW YORK, DECEMBER 16, 1916.

Thirty-fourth Year.

Telegraph and Telephone Age

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NEW YORK, DECEMBER 16, 1916.

CONTENTS.

Christmas Thoughts. Our Friends Stand by Us. Western Union	
Employees in Good Fortune.....	571
Stock Quotations. Patents. Personal.....	572
F. B. Jewett. Postal Executive Office Notes. Western Union	
Executive Office Notes. Good News for Western Union	
Employees.....	573
Retirement of W. H. Baker. A. F. Burleigh, Secretary.....	574
A. R. McGrath. I. N. Miller, Jr.....	575
The Cable. A. Beck. Ocean Cables and Trawlers.....	576
Canadian Notes. The Telephone. Using the Telephone in Sudden	
Calls for Help. I Am the Telephone. Radio Telegraphy.....	577
Institute of Radio Engineers. Some Wireless Speed Records.	
Cable vs. Wireless.....	578
Newspaper "Beats".....	579
Telegraphy in Shorthand. Telegraph Oddities.....	580
Farewell Dinner to A. B. Cowan.....	581
Obituary. Creed & Co. Proposed Change in By-Laws, Telegraph	
and Telephone Life Insurance Association. Insurance vs.	
Investment in Serial Building Loan and Savings Institution.....	582
The Railroad. Transposition Systems. Municipal Electricians.	
Automatic Telegraph Repeater.....	585
Educational—Cross Talk and Its Cure. The Primary Battery.....	586
Index Notation. Questions on Wire Testing.....	587
Efficiency Engineering in the Telegraph Service (Continued).....	588
J. W. Hayes' Department—Speculation. The Pleiades Club,	
Chapter III.....	589
Helena, Mont. Notes.....	590
With the Boys in Kansas City. Forty Years Later.....	591
On the Wing. Letters from Our Agents.....	592
Portrait of Wm. H. Baker.....	Supplement

Christmas Thoughts.

Once more it is our pleasure to extend to our many friends the season's greetings. Before another issue of this paper shall have appeared Christmas, with all its good will and cheer, will have passed, and we will be at the portal of a new year, full of hope and promise for multitudes of our fellowmen.

We hope that the Christmas spirit will stir the hearts of our people and turn their thoughts toward the millions in Europe who are suffering deprivations of every conceivable kind, while we in this country are enjoying prosperity and happiness. If Christmas means anything to us individually we should at this time share our blessings with those who are less fortunate. By relieving to some extent their distress we shall bring upon ourselves a greater

measure of durable happiness than could be obtained in any other way. The happiness and satisfaction resulting from deeds of kindness and kind thoughts is far beyond the power of material things to give, so let us carry out these ideas in practice as far as we can and enjoy real happiness. We wish all a merry Christmas of the true kind.

Our Friends Stand by Us.

It is a great satisfaction to the publishers of a periodical, especially one that is devoted to some particular interest, to know that a great majority of the subscribers stick to their paper and uphold it through thick and thin.

The present is a hard time for newspapers in general and many subscribers are dropping out for various reasons, the principal one being the necessity of retrenchment on account of the high cost of living. TELEGRAPH AND TELEPHONE AGE, however, seems to be an exceptional instance, for our friends are standing by their paper with commendable loyalty, and it is with extreme pleasure that we make this acknowledgment. We thank them one and all for showing their unflagging interest toward the paper. To the publishers this is evidence of approval of the character of the publication and an expression of the desire to keep it alive in its good work. If a reader of a newspaper takes offense at it or disagrees with it in any way, or he is hard up, he is likely to stop buying and reading it. But we are happy to say this is not our experience, because there is an agreement of minds between us and our readers, and our paper is classed by the latter as a necessity and not a luxury, to be lopped off on the least provocation. The fact of the matter is telegraph and telephone people do not live by bread alone; their minds have to be nourished as well, and they naturally turn toward the source of mental nourishment of their particular kind.

TELEGRAPH AND TELEPHONE AGE, like all other business concerns, suffers greatly from the high cost of materials and work, but so long as its friends stand by it the way they are doing it is willing and glad to sacrifice many things of a personal nature in order to merit their good will.

Western Union Employees in Good Fortune.

Employees of the Western Union Telegraph Company receiving compensation at the rate of \$2,000 or less per annum are to receive a special payment of money at this Christmas time to help meet the high cost of living, which is a harassing problem these days. These employees are to be congratulated, and the company is entitled to special commendation for its generosity towards its people. Its strength lies largely in the good will of its employees, and it certainly is entitled to that. Business is enormously heavy these days but a light heart on the part of the employees and hearty co-operation turns work into pleasure.

Stock Quotations.

Following are the New York closing quotations of telegraph and telephone stocks on December 13:

American Tel. and Tel. Co. (ex rights).....	126
Mackay Companies (ex-div.)	83¼-83¾
Mackay Companies, pfd. (ex div.)	64¾
Marconi Wireless Tel. Co. of Am. (Par value 5.00)	3¼
Western Union	101½

Telegraph and Telephone Patents.

ISSUED NOVEMBER 11.

1,204,412. Cable-Terminal. To Frank B. Cook, Chicago, Ill.
 1,204,628. Lightning Arrester. To Wilber Meads Wilson and Willie Reid McCrackie, Bryson City, N. C.

ISSUED NOVEMBER 18.

1,205,248. Printing-Telegraph Apparatus. To Carl Eric Nelson, Wilkesburg, Pa.
 1,205,281. Compensation Device for Line Wires. To Arvid C. Sorensen, Webster, N. D.
 1,205,365. Method and Apparatus for Wireless Telephony. To John P. McCarthy, Oakland, and Kendall Douglas, San Francisco, Cal.
 1,205,460. Receiving Apparatus for Electric Telegraphs and Electric Selective Systems. To William Joseph Lyons, Dublin, Ireland.
 1,205,499. Telephone Exchange System. To Joseph L. Wright, Washington, D. C.
 1,205,518. Telephone Exchange System. To Edward B. Craft, Hackensack, N. J.
 1,205,520. Selector Switch. To Henry F. Dobbin, New York.
 1,205,523. Telephone Exchange System. To Bert G. Dunham, Hawthorne, N. J.
 1,205,530. Method of and Means for Translating Sounds. To Ray E. Hall, Portland, Ore. (Wireless.)
 1,205,538. Telephone System. To Edward E. Hinrichsen, East Orange, N. J.
 1,205,617. Telephone Exchange System. To Charles L. Goodrum, New York.
 1,205,677. Inking Mechanism for Bulletin Printing Machines. To Karl A. A. Staahlgren, New York. For telegraph printers.
 1,205,700. Selecting Device for Automatic or Semi-Automatic Telephone Systems. To Gotthile Ansgarius Betulander, Sodertorns Villastad, and Nils Gunnar Palmgren, Stockholm, Sweden.

ISSUED NOVEMBER 25.

1,206,053. Telephonic Fire-Alarm Apparatus. To Everett L. Thompson, Dover, N. J.
 1,206,524. Phantom Loading Coil. To William Fondiller, New York.

Have a Purpose in Life.

Without a plan and a schedule little can be accomplished in life. The great thing is to have a purpose and stick to it until it is accomplished. Jumping from one thing to another in thought or in action is a waste of time and effort.

PERSONAL.

MR. WALTER L. JONES, president and general manager, The Postal Telegraph-Cable Company of Texas, Dallas, Tex., was a recent New York and Boston business visitor.

MR. G. H. GROCE, formerly of the Electric Storage Battery Company's Chicago office, is now with the United States Lighting and Heating Corporation, 1402 Railway Exchange Building, Chicago.

MR. JOHN D. HOGSHEAD, identified with the Baltimore *Underwriter*, one of the leading insurance papers in the East, a son of Mr. E. H. Hogshead, the veteran telegrapher of Meridian, Miss., was a New York City business visitor on December 8.

MR. H. E. DUNHAM, at one time and for several years editor of TELEGRAPH AND TELEPHONE AGE, now assistant patent attorney of the General Electric Company, Schenectady, N. Y., was a New York business visitor recently.

MISS EFFIE MAVER, daughter of Mr. and Mrs. William Maver, Jr., was married to Mr. Richard Freleigh Van Vranken of Albany, N. Y., at Jersey City, N. J., November 22. The bridal couple left for Hot Springs, Va., where they will stay for three weeks, then returning to Albany, N. Y.

PROF. ELIHU THOMSON, past president of the American Institute of Electrical Engineers, was on December 8, presented with the John Fritz medal, which was awarded to him last January. The presentation took place in the central lecture hall at the Massachusetts Institute of Technology, Cambridge, Mass.

VISITORS.—Among the New York visitors recently were Mr. Thomas Ahearn and Mr. W. Y. Soper, of Ottawa, Ont. These gentlemen are among the foremost citizens and capitalists of Canada. They were formerly telegraph operators and were well known to the craft. Many of their old New York associates had the pleasure of greeting them.

MR. E. E. HUDSON, in charge of the primary battery business of the Thomas A. Edison, Inc., Orange, N. J., will on January 1, 1917, become vice-president and general manager of the Waterbury Battery Company, Waterbury, Conn. Mr. Hudson is well-known among commercial and railway telegraph people and his many friends in these fields will wish him success in his new position.

MR. CHARLES E. SCRIBNER, chief engineer of the Western Electric Company, New York, has, at his own request, been relieved of his executive duties and has been appointed to the position of consulting engineer. Mr. F. B. Jewett, assistant chief engineer of the company, has been appointed to succeed Mr. Scribner as chief engineer. Mr. Scribner has been with the Western Electric Company and its predecessors for forty years.

MR. M. W. JONES, superintendent telegraph and telephone, and general freight and passenger agent of the Guayaquil and Quito Railroad Company, with headquarters at Quito, Ecuador, is in New York on a three months' leave of absence. Mr. Jones was for many years identified with the Western Union service in its executive offices at 195 Broadway before going to Ecuador in 1909. His home is in New York, where, for many years,

he was a telegraph operator and a member of the various telegraph associations and clubs. His numerous friends were pleased to greet him and to learn of the success with which he is meeting in his South American home.

F. B. Jewett, Chief Engineer, Western Electric Company.

Mr. F. B. Jewett has been appointed chief engineer of the Western Electric Company, to succeed Mr. Charles E. Scribner, as announced in another column. Mr. Jewett was born in Pasadena, Cal., September 5, 1879, and was graduated from Throop Polytechnic Institute of Pasadena in 1898. He then entered the University of Chicago, receiving the degree of Ph.D. in 1902. From 1901 until 1904 Mr. Jewett pursued technical and instructional work, the latter at the Massachusetts Institute of Technology.

In 1904 he became connected with the American Telephone and Telegraph Company and had charge of transmission development work, with the title of Transmission Engineer. He had charge of the transmission engineering work on the transcontinental line.

In April, 1912, Mr. Jewett became assistant chief engineer of the Western Electric Company, having charge of development and research work. He is one of the best-known scientific men in the country.

POSTAL TELEGRAPH-CABLE CO.

EXECUTIVE OFFICES.

MR. EDWARD REYNOLDS, vice-president and general manager, is absent on a trip through the Western Division. He is expected to return in a few days.

MR. C. C. ADAMS, vice-president of this company, has been appointed treasurer of the Nassau County Mosquito Extermination Commission, which was created by the last legislature.

MR. C. P. BRUCH, vice-president, was reelected president of the Ohio Society of New York, December 11. The society was organized thirty-one years ago and Mr. Bruch is its tenth president. Mr. Bruch responded to a toast at the banquet given at the Astor Hotel, New York, Friday evening, December 8, on the occasion of the Fifth Annual Tour of Ohio Corn Boys and Girls.

MR. E. KIMMEY, superintendent, New York, has returned from a business trip to Albany and Utica.

MR. RAY H. REDMOND, one of the winners in the San Francisco tournament last year, identified with the Southern Pacific interests, has entered the commercial service and accepted a position with the Postal Telegraph-Cable Company at San Francisco.

MR. GORDON E. WIDEL, manager of the Franklin, Pa., office, has been promoted to the position of chief clerk to superintendent Henry Scrivens, at Pittsburgh, Pa., vice L. J. Mackey, recently promoted to the managership of the Erie, Pa., office. Mr. Widel is succeeded at Franklin by L. R. McCall, former manager at New Castle, Pa.

MR. E. F. DUNN, traffic chief of this company, Indianapolis, Ind., accompanied by Mrs. Dunn was in New York on December 12 attending the funeral of Mrs. Dunn's sister.

CAPTAIN THOMAS ROBINSON, aged seventy-eight years, previous to two years ago and for many years marine observer for the Postal Telegraph-Cable Company at Sandy Hook, N. J., died in Brooklyn December 11. Mr. Robinson, before going with the Postal Company, was for over twenty-five years ship news reporter for the *New York Herald*.

SUE ANY OLD COMPANY, WHAT'S THE DIFFERENCE?—In Connecticut a few days ago a lawsuit against the Postal Telegraph-Cable Company for \$10,000 damages was withdrawn by the plaintiff on the ground that he had made a mistake and was suing the wrong company. All telegraph companies look alike to most plaintiffs and they are not very particular who pays the bill of damages so long as it is paid.

MR. G. H. MILLS, manager, Postal Telegraph-Cable Company, Providence, R. I., in remitting to cover his subscription for another year, writes: "I am pleased that you did not cut me off your list when my subscription expired, as I could not very well get along without the AGE."

WESTERN UNION TELEGRAPH CO.

EXECUTIVE OFFICES.

MR. A. F. BURLEIGH has been appointed secretary of this company to succeed Mr. W. H. Baker, retired. Mr. Burleigh was formerly attorney for the company at New York.

MR. W. H. BAKER, former secretary of this company, who retired December 1, left December 4 for fishing trips to New Orleans and Galveston. He will be absent about a month.

MR. B. L. BROOKS, division traffic superintendent, Denver, Col., has been transferred to San Francisco as division traffic superintendent of the Pacific Division, vice Mr. H. C. Chace, resigned to become superintendent of telegraph of the Santa Fe System.

MR. C. R. FISHER, of the office of Mr. W. N. Fashbaugh, vice-president in charge of traffic, New York, has been appointed division traffic superintendent of the Mountain Division, with headquarters at Denver, vice Mr. B. L. Brooks, transferred to San Francisco.

VISITORS.—Among recent executive office visitors were: M. T. Cook, general manager, Pacific Division, San Francisco; B. L. Brooks and H. C. Chace, division traffic superintendents at Denver and San Francisco, respectively; C. W. Carver, division auditor, Atlanta, Ga., and A. Woodle, district commercial superintendent, Buffalo, N. Y.

MR. R. N. LONG, formerly of Oklahoma City, Okla., has been appointed chief operator of the Shreveport, La., office of this company.

Good News For Western Union Employees.

At a special meeting of the directors of the Western Union Telegraph Company on December 5, it was decided to distribute a single special payment to employees receiving compensation at the rate of \$2,000 or less per annum.

Here is the official statement by the company:

"In recognition of the exceptional conditions now prevailing, the board determined to grant a single special payment to each regular employee receiving a compensation of \$2,000 or less per annum who

had been continuously in the service since January 1, 1916, excepting such cable employes as have received special payments during the year. The payments will be made as soon as possible in conformity with rules and regulations established by the board, but in a general way messengers at independent offices will receive \$25 each; employes receiving less than \$1,200 per annum seven per cent. of their annual wage; and employes receiving from \$1,200 to \$2,000 per annum, both inclusive, six per cent. of their annual wage."

Retirement of W. H. Baker, Secretary, Western Union Telegraph Company.

Mr. William H. Baker, one of the most widely-known officials in the telegraph service in this country, and secretary of the Western Union Telegraph Company since 1911, retired from active service December 1.

Mr. Baker was born in Buffalo, N. Y., April 13, 1855. At the age of fourteen he found his first employment in a law office in New York, and afterwards entered the service of a commission house. Soon after entering his fifteenth year, application was made in his behalf to Mr. A. B. Chandler, who invited him to his office. The boy's gentlemanly manners and quick intelligence at once made a favorable impression, which was strengthened during the course of the interview by his careful observance of the rights of his then present employer and the necessity for giving due notice of his intended change so that no inconvenience should be suffered.

His capacity for work soon removed him from the post of office boy, and he was assigned to a clerkship under the immediate direction of the late Edward C. Cockey, who then had charge, in the general superintendent's office, of the accounts of all superintendents of the Eastern Division of the Western Union Telegraph Company, and also of the office accounts of the sixth district in that division. Under the constant and critical instructions of this prince of accountants and the counsel of both General T. T. Eckert and Mr. A. B. Chandler, both of whom were warmly interested in his development, young Baker continued in various capacities in the service of both the Western Union and Atlantic and Pacific Telegraph companies, including the secretaryship of the Atlantic and Pacific Company, until early in 1885, when he was appointed secretary of the American Electric Manufacturing Company. On resigning from this position he bought a membership in the New York Stock Exchange but soon disposed of it and entered the service of Mr. Theo. N. Vail, then president of the Metropolitan Telephone Company, with whom he continued for more than three years, and by whom he was highly esteemed, both for his business qualifications and his personal character. In the fall of 1889 he was appointed vice-president of the Postal Telegraph-Cable Company and assumed the duties pertaining to that position on November 1 of that year, becoming first vice-president and general manager of the same company soon after.

In May, 1907, he resigned from the service of the Postal Company and after a short rest resumed

business relations with Mr. Theo. N. Vail, with the American Telephone and Telegraph Company, and on November 8, 1911, was elected secretary of the Western Union Telegraph Company.

Mr. Baker was president of the Magnetic Club one term. He was once the treasurer of the Telegraphers' Mutual Benefit Association, and is one of the charter members of, and is still interested in, the Serial Building Loan and Savings Institution. He is president of the Telegraph and Telephone Life Insurance Association and has conducted the affairs of the Association with commendable skill and activity, and has placed it on a stronger foundation than ever before.

"Although it is a little over forty-seven years since I first started to work," said Mr. Baker in an interview with a representative of TELEGRAPH AND TELEPHONE AGE, "it has been an exceedingly busy period for me. Looking back it only seems a few years since, on returning home from a ball game, with a bat over my shoulder, and jumping over the front fence because a gentleman was standing at the gate talking with my mother.

"I was called back by my mother and introduced to A. B. Chandler, which resulted a few days later in my starting as office messenger in the office of the general superintendent of the Eastern Division of the Western Union Telegraph Company, General Eckert then holding the title, with Colonel Chandler his assistant, Edward C. Cockey, chief clerk, and A. R. Brewer, clerk in charge of complaints and claims. Shortly after Thos. F. Clark arrived as stenographer.

"They were happy days," said Mr. Baker in conclusion, "and were followed by many happy and very active years, and now I am desirous of being my own boss and being footloose to enjoy life while yet young and active, and incidentally looking after several enterprises in which I am interested."

Mr. Baker has a large circle of admirers and friends in and out of the telegraph business who will wish for him many years of happiness, after his long career of well directed activity.

A portrait of Mr. Baker accompanies this issue as a supplement.

A. F. Burleigh, Secretary, Western Union Telegraph Company.

Mr. A. F. Burleigh, recently appointed secretary of the Western Union Telegraph Company, comes



A. F. BURLIGH.

from the legal department of the company at New York, with which he has been connected since May,

1909. He was born in Kittanning, Pa., January 7, 1858, and studied law under Chancellor W. G. Hammond and the late John F. Dillon, who was then judge of the Eighth circuit, and was for several years counsel for the Western Union Company. He graduated in law from the State University of Iowa in 1878 and was admitted to the bar at the age of twenty. After a term as prosecuting attorney in Montana he, in 1889, became legal representative in the State of Washington, at Seattle, of the Western Union Telegraph Company, a relation which continued for about ten years. He was general counsel for various large interests on the Pacific Coast, and in 1893 was offered, but declined, election to the United States Senate from the State of Washington by the Republicans. He was also receiver of the Northern Pacific Railroad in 1895-6. He removed to New York in 1901 and practiced law until he joined the Western Union legal department.

A. R. McGrath, District Commercial Superintendent, Chicago.

Arthur R. McGrath, appointed district commercial superintendent of the first district, Western Division, Chicago, Ill., was born in Chicago, August 4, 1879, and began his telegraph career as a messenger with the Postal Telegraph-Cable Company at



A. R. MCGRATH.

Cleveland, Ohio, at an early age. Young McGrath specialized on the difficult and important marine deliveries, and with the thoroughness that characterized his later years, assiduously acquainted himself with the haunts and habits of every fresh water skipper that sailed into the port of Cleveland. Often he was called upon after his regular hours to ferret out addresses and make deliveries where others had failed. His activity, resourcefulness, and perspicacity attracted the attention of the then general superintendent, Mr. E. J. Nally, who marked him as a "comer," and encouraged him to take up the study of telegraphy.

Young McGrath progressed from messenger to check boy and carried messages for many since noted operators including Thomas W. Carroll, now

general manager of the Eastern Division, New York. Subsequently Mr. McGrath worked in every department of the old Cleveland Postal office, mastering each branch of the work in turn, and advancing finally to the assistant managership. In 1904 he came to Chicago as chief clerk to Superintendent Hancock. Later a strong man was required for the Chicago office managership, and the choice fell on Mr. McGrath who held this arduous post until December 16, 1910, when he resigned to go with the Western Union Telegraph Company, Chicago, as division commercial agent.

Because of his experience, energy and accurate knowledge of practical telegraph affairs, Mr. McGrath was a tower of strength to his new employers during the strenuous reorganization period of 1911 and 1912. Much of the credit for the transformation of office and service conditions to the present high state of efficiency is due to his hard and well-directed work, of which his recent promotion is a merited recognition.

Superintendent McGrath is one of the best known telegraph men in the country, and his many capabilities, added to an engaging personality which radiates the genial warmth of the Emerald Isle, have made him one of the most popular. His hosts of friends both within the ranks, and without, are rejoicing in his recent advancement and are unanimous in predicting greater successes to come. His new appointment took effect December 1.

I. N. Miller, Jr., Superintendent, Seattle, Wash.

Mr. I. N. Miller, Jr., former president and treasurer of the British Columbia District Telegraph and Delivery Company, Ltd., Vancouver, B. C., has been appointed district commercial superintendent of the second district, Pacific Division, with headquarters at Seattle, Wash., vice Mr. E. Boening, transferred.

Mr. Miller is a native of the Buckeye State. He was born in New Vienna, Ohio, in 1868, and began his telegraphic career in 1885 in his home town. Two years later he went to Cincinnati for the Western Union, afterwards going to Knoxville, Tenn., for the Southern Railroad. He remained there two years, and then went to Denver, Col., as operator for the Denver and Fort Worth Railway. From July, 1889, to January, 1893, he was secretary to Mr. Frank Jaynes, superintendent of the Western Union Telegraph Company at San Francisco, Cal. For ten years afterward he filled the position of chief clerk and then became superintendent of the Pacific Division of the American District Telegraph Company at San Francisco. In 1906 he was appointed superintendent for the Western Union and on April 15, 1907, assistant general superintendent of the company, as well as that of the American District Telegraph Company. Later he became president and treasurer of the British Columbia District Telegraph and Delivery Company, Ltd., at Vancouver, B. C., which position he held at the time of his recent appointment as superintendent for the Western Union at Seattle.

Luck is merely a case of opportunity meeting the right man.

THE CABLE.

MR. R. D. PAULIN.—During the absence on sick leave through ill-health of Mr. W. J. Blenheim, traffic manager of the Western Union Cable system, London, England, which was referred to in our issue of November 1, Mr. R. D. Paulin, who has been acting for some time as assistant traffic manager in London under Mr. Blenheim, has, during the latter's absence, been appointed as acting traffic manager with the full powers of Mr. Blenheim and with control of traffic matters on both sides of the Atlantic. Mr. Paulin was for many years in the service of the Anglo-American Telegraph Company at its cable station at Valentia, and before being transferred to London to assist Mr. Blenheim, was senior supervisor at that station. His experience in actual cable work is probably equaled by but few of the staff of the Western Union cable system.

MR. H. A. SAUNDERS, superintendent of the Anglo Cable station, St. Johns, N. F., is in New York on company business.

MR. J. J. WELCH, assistant cable traffic manager in America, Western Union Telegraph Company, New York, and Mr. T. F. Foley, superintendent of the Hammels, L. I., cable station, have returned from their trip of inspection of the various Atlantic cable stations in Nova Scotia and Newfoundland.

FIELDING CHEVALLIER, aged sixty-three years, consulting electrician of the Commercial Cable Company in England, died in London, November 3.

CABLE MESSAGES RECEIVED BY SOUND.—A means for receiving cable messages by sound instead of visually, as at present, has been developed under the direction of Lieut. Col. George O. Squier, Signal Corps, United States Army, by Dr. Louis W. Austin, in charge of the Naval Radio Laboratory, Bureau of Standards, and Dr. Louis Cohen, consulting engineer of the Signal Corps. The improvement consists essentially in the adaptation of the "ticker" and audion types of instruments used in receiving radio signals.

South American Cable Monopoly Broken.

The Central and South American Telegraph Company will now be able to lay cables from Buenos Aires, Argentina, to Brazil, along the Atlantic coast, as a result of a decision in the Brazilian Supreme Court on November 25. The Western Telegraph Company endeavored to secure a continuation of the cable monopoly between Brazil and Argentina, but the Brazilian Supreme Court rendered a decision in favor of the Central and South American Telegraph Company.

A. Beck, Secretary Commercial Cable Company.

Mr. Albert Beck, secretary of the Commercial Cable Company New York, is the subject of a personal sketch in the *Postal Telegraph* for December.

Mr. Beck was born in New York, December 28, 1866, and prior to his entering the service of the Commercial Cable Company in 1884, was employed in the law office of Samuel L. M. Barlow. He was confidential clerk to Mr. George G. Ward, vice-president and general manager of the Commercial

Cable Company, and in 1890 was appointed assistant secretary of the company. In 1897 he was made secretary, and in 1904 was elected a director.

Mr. Beck is also secretary of The Mackay Companies and of the Commercial Pacific Cable Company.

In recognition of his services in connection with the laying of the first cable between America and Japan Mr. Beck was decorated by the Emperor of Japan with the Order of the Rising Sun.

Cable Interruptions.

Interruptions to submarine telegraph cables are reported to December 13, as follows:

Azores and Emden (two cables), August 5; Shanghai and Tsingtau, and Tsingtau and Cheefoo, August 24; Sweden and Germany, September 30; Almeria and Melilla, October 1; Penogomera and Alhucempas (defective cable), October 1; Yap and Menados (offices closed), October 7; Obock and Djibouti, November 6; Constantinople and Tenedos, November 6, 1914.

Ocean Cables and Trawlers.

Much has been said and written about the great damage to ocean cables occasioned by steam-trawlers upon the fishing grounds west of Ireland, where the ocean cables have been broken many times in fifteen years and at other points near the European coast. A description of the methods of operation of these fishermen may be of interest. The boats are generally about 120 feet long, with a few hundred tons displacement, and with engines of eighty horsepower. They operate either singly or in fleets of half a dozen, all over the shallow waters of western Europe, from the Arctic circle to the southern limit of Morocco. They have gradually increased their range of working until now they operate at depths of 300 fathoms or over. Each boat usually carries a crew of nine men.

The methods employed to keep a steam-trawl net moving over the sea bottom are very interesting. The net is commonly about sixty feet wide at the bottom, and is fastened to two boards, one at each end of the foot-rope, or lower edge of the net. These boards, called otter boards are about the size of a billiard table, and are made up of wood slabs, some three inches thick, rimmed with iron. They are water kites, being held near the center of one face by a steel rope and fastening. The steel rope forms the kite string, the otter board the kite, and the trawl net the kite tail. When the steamer goes over the ground at a speed of two-and-a-half or three knots the two otter-boards skim over the bottom, each towed by a steel rope. They keep nearly in a vertical plane and tend to pull apart like a pair of kites heading away from each other, but kept in harness by the trawl net between and behind them. Such fish as come within the scope of the advancing net are unable to escape the rush of water, and are finally hauled up by winding in the steel ropes.

The trawlers naturally work along and across the numerous ocean telegraph cables, the nets and otter-boards passing over them hundreds of times without

any interference. Occasionally, however, an otter-board engages a cable. This is either because there is some slight projection on the edge of the board, or possibly because the cable may be festooned from one submarine hillock to another, thus permitting the otter-board to work underneath the cable. When a trawler is unlucky enough to engage a cable it is a battle between rope and rope. The trawler winds in her warps as best she can. If the cable is very strong and taut, and the water deep, the warps break and the trawler loses net, catch, otter-boards and warps, to say nothing of time and temper. If, however, the cable is not very strong, the warps may hold and the cable may break, involving the cable company in much loss of money for traffic and repairs. Or the cable may be raised to the surface and be disengaged by the fisherman without rupture, but yet be injured, and put out of working order, by reason of the sawing and chafing it is subjected to under the plunging of the trawler in a heavy sea.

CANADIAN NOTES.

CANADIAN PACIFIC.

Mr. R. N. Young, superintendent of telegraphs, British Columbia Division, Vancouver, B. C., held a meeting in that city November 13 and 14 of Canadian Pacific Railway telegraph agents for the purpose of discussing ways and means for the improvement of the service.

THE TELEPHONE

MR. GEO. W. LEWIS has been elected vice-president of the Cincinnati and Suburban Bell Telephone Company, Cincinnati, Ohio, succeeding Mr. R. T. McComas, resigned.

CHANGES IN CENTRAL GROUP COMPANIES.—The following changes have been made in the central group of Bell telephone companies: Mr. W. R. McGovern, engineer of the Chicago Telephone Company, has been appointed chief engineer, succeeding Mr. J. G. Wray, who has resigned to go with a private engineering concern. Mr. James S. Ford succeeds Mr. McGovern as engineer. Mr. M. B. Downing has been appointed traffic superintendent at Detroit, Mich., to succeed Mr. J. W. Bradshaw, who has been transferred to the engineering department of the American Telephone and Telegraph Company.

WILLIAM HATTEROTH, aged seventy-three years, a California pioneer, who assisted Dr. Alexander Graham Bell in his early telephone experiments, died in San Francisco December 6. He is credited with having built the first telephone line in China.

BOND ISSUE APPROVED.—At a special meeting of stockholders of the American Telephone and Telegraph Company, held December 6, approval was given to the issue of \$80,000,000 of 30-year collateral trust 5 per cent. bonds.

THE BOSTON PLANT CHAPTER of the Telephone and Telegraph Society of New England will hold a smoker and entertainment at Convention Hall, Saint Botolph Street, Boston, Thursday evening, December 14. There will be a mock trial, dancing and a whist party, besides entertainment by professional talent. Mr. Gordon S. Wallace, 125 Milk Street, Boston, is secretary.

LARGE PRIVATE BRANCH TELEPHONE SYSTEM.—The Hotel Commodore, one of New York's newest and one of the largest hotels in the world, will be furnished with the largest private branch telephone system ever constructed. It will have a 26-position common battery switchboard, equipped to serve 2,400 extension stations, and approximately 1,000,000 local messages will be contracted for. The equipment will be fully as large as the telephone development of the average American city of 20,000 inhabitants.

Convention of Independent Telephone Association.

The annual convention of the United States Independent Telephone Association was held at the Hotel La Salle, Chicago, December 5, 6, 7 and 8, and was largely attended.

Directors were elected for three, two and one year terms. The present officers were re-elected as follows: C. Y. McVey, of Cleveland, president; W. H. Bryant, Mobile, Ala., G. W. Robinson, St. Paul, Minn., and F. B. MacKinnon, Washington, D. C., vice-presidents, and W. S. Vivian, Chicago, secretary-treasurer.

Using the Telephone in Sudden Calls for Help.

Very often when an attempt is made to summon help by telephone, in cases of emergency, under the excitement of the moment not enough information is given to Central to insure proper action. Frequently, in case of fire for instance, a subscriber will call Central and say excitedly "there is a fire here, call the fire department," and then hang up the receiver with a snap. Central then has no way of telling where the fire is and can do little or nothing to secure the necessary help.

The New York Telephone Company has issued some common sense instructions to subscribers to be followed in cases of emergency, as follows:

When summoning help by telephone in cases of fire, lawlessness or accident, give your call to the telephone operator in such a way that the nature of the emergency will be clearly understood. Say to the operator, for example,

"I want to report a fire."

"I want to get a policeman."

"I want to get an ambulance."

If you are compelled to leave the telephone before the called station answers, tell the operator where help is required. In other words, give your call to the operator in such a way that she will be able to appreciate the urgency of your message and so make every effort to render aid.

RADIO TELEGRAPHY.

MARCONI NOTES.

Mr. E. J. Nally, vice-president and general manager, on November 16 sent a check for \$500, the amount of an insurance policy provided by the Marconi Company to its employees, to the family of operator P. B. Hebden, who was drowned at Rio Janeiro recently. The amount was gratefully acknowledged by the sister of the deceased, whose family lives in Philadelphia.

Mr. A. H. Ginman, general superintendent of the Pacific Coast division of the Marconi Company, San Francisco, resigned December 1, and Mr.

George H. Jessop, marine superintendent of the Pacific Coast division also resigned.

Mr. W. A. Winterbottom, from the New York office, has been appointed division superintendent, having charge of the Marconi-trans-Pacific service as well as the Marconi-Alaskan service.

Mr. T. M. Stevens, formerly superintendent of the Baltimore division of the Marconi Company, has been transferred to San Francisco where he has assumed duties as superintendent of the marine division. He will have charge of all matters pertaining to maintenance and operation of ship and marine shore stations, including personnel.

Mr. William H. Howard, an employe in the Aldene, N. J., factory of this company, was presented with a solid gold watch fob recently by the officials and employes of the factory on his return with his regiment from the Mexican border.

WIRELESS FOR POWER TRANSMISSION COMPANY.—The Southern Sierras Power Company, operating in Southern California, has adopted plans to establish wireless service between its generating plants and substations. The company's system covers a distance of approximately 400 miles. Two sets of radio equipment have been installed in important stations and other installations are being made. Some of the plants will be equipped with apparatus with a transmitting radius of 500 miles or more.

Institute of Radio Engineers.

The regular meeting of the Institute of Radio Engineers was held in the Engineering Societies Building, New York, Wednesday evening, December 6. A paper on "The Classification and Elimination of Strays" was presented by Dr. C. J. deGroot. Dr. deGroot, who is head of the radio service of Holland in the Dutch East Indies, has developed some remarkable methods of classifying and eliminating strays.

Some Wireless Speed Records.

Although the service of the Marconi Wireless Telegraph Company of America between the United States and Japan was inaugurated only a short time ago, several speed records in sending and receiving messages have already been made by operators in the trans-Pacific stations.

Operator "Paddy" Walsh of Honolulu recently sent to the Marconi receiving station in California, a distance of 2,372 miles, sixty-seven messages in one hour and twenty minutes. None of the messages was shorter than fifteen words and some of them contained forty words. W. H. Barsby, operator at the receiving station, copied the messages without a break or an error.

Operators in the Marconi office in the heart of the business section of Honolulu are now, with the aid of repeaters, transmitting direct to both the United States and Japan. Automatic transmission and reception of messages at a speed of from eighty to 100 words a minute will be brought into use in the near future. Duplex transmission equipment has been provided, the tests made, and when conditions warrant the step, transmission at that speed in two directions simultaneously will be employed.

Cable versus Wireless.

We have been asked if in our opinion the wireless will ever supersede the cables.

A cable authority states "the wireless will never supplant the submarine cable as many people think." It must be borne in mind that the cable is a service connecting two points. The wireless is a universal service. It can reach the remotest points on the earth. The service that the wireless is doing for humanity alone, irrespective of its value in handling commercial business, is beyond estimate. The wireless reaches places where cable service is impossible. In some cases wireless has taken the place of the cable, Nassau, Bahamas, being an instance, the cable connecting that island being abandoned in favor of the wireless.

A wireless authority says:

"Several important technical problems in connection with long distance wireless telegraphy still await solution but the development of the art during the past few years makes it altogether conservative to state that these problems are fast being solved and that the most serious obstruction to perfect long distance wireless communication, i. e., 'static,' will most probably be removed in the quite immediate future.

"I think the answer to the question, therefore, is most positively in the affirmative. To my mind the wireless will eventually supersede the cables because it is natural and logical that it should do so. The only function that a cable performs is to conduct electrical energy. When a natural medium exists for doing the same thing, i. e., conduct electrical energy, is it not superfluous to provide an artificial means for doing the same thing, namely, laying a cable?

"If nature provided a good road between New York and San Francisco and we wished to travel over this road, the only cause there could be for building another road on the top of it in the form of an elevated structure would be when the natural road was unable to handle all of the traffic. In transoceanic communication the same will be true of the ether and cable roads.

"Moreover, with the advance of science, I am convinced that we shall eventually be able to communicate across the Atlantic or across the Pacific with the use of moderate power. By moderate I mean twenty-five to fifty kilowatts in the antenna. When this is accomplished the cost of long distance wireless stations will be insignificant as compared with the cost of laying the cables."

TO WORK FOR 1,000 NEW MEMBERS.—President W. H. Baker, of the Telegraph and Telephone Life Insurance Association, has addressed a circular letter to the members suggesting that they work for 1,000 new members between now and March 14, the date of the next annual meeting of the Association.

Mr. J. S. McIntire, Manager, Postal Telegraph-Cable Company, Elmira, N. Y., writes: "Thank you for renewing my subscription to TELEGRAPH AND TELEPHONE AGE, as I do not wish to lose any copies."

Newspaper "Beats"*

A newspaper "beat" in these days on any important item of news is a rarity. The time was when every once in a while one of the big newspapers would beat its competitors in announcing some big happening, and for days after the columns of that paper would be filled with the story of how it was done, and with the usual newspaper modesty proclaiming itself as the best newspaper in the world. But all this has been done away with by the elaborate and extensive system of telegraphs and cables, and by the multitude of news association with their representatives in every quarter of the globe.

The tales of the Western plain do not begin to compare in adventure and resourcefulness with the tales of the newspaper "beats" of the olden days.

The first great news "beat" of which we have authentic record was the announcement of the victory of the Athenians over the Persians at the battle of Marathon, in the year 460 B. C., when a young Athenian ran twenty-six miles into Athens carrying the news of the victory, and after imparting his story he dropped dead. And this classic news "beat" we now repeat every few years in the great Olympic games, but the victor instead of dropping dead carries off the greatest prize of the games amid the plaudits of the assembled multitude, and then signs a contract for fifty-two weeks on the vaudeville stage. Or he writes signed articles in the sporting columns of the papers at so much per article.

Paul Revere's ride also may be classed as a news beat, and shows an advance over the days of Marathon in that he chose to ride on horseback, instead of going afoot, to carry the news to the folks of the countryside that the Britishers were coming.

The telegraph has also had its share in the stories of news "beats," and the New York *Herald* in a recent issue recites a few of these "beats," one of the most famous of which was that of Mr. F. C. Chapman, a reporter for the *Herald*, who was reporting the fighting at Gettysburg. As soon as victory for the Union forces was certain he dashed from the field and arrived in Baltimore early on the morning of July 4, 1863. There he was unable to find the manager of the American Telegraph Company, with whom the *Herald* had a contract. So he hurried to the home of James N. Worl, superintendent of the rival corporation, the Independent Telegraph Company.

"Mr. Chapman aroused the superintendent from sleep and hustled him down to the telegraph office. There Mr. Worl opened the wire and, calling New York, found that the man on the other end was awake. He then began sending Chapman's 'stuff.' At the regular office hour for opening another operator came on duty, and he also was put on the only other wire to New York, sending a part of Chapman's story. Both operators were pounding the keys for all they were worth and gradually reducing the mass of copy when Richardson, the *Tribune* correspondent, came dashing down the street. Chapman had to go out to get more 'stuff' and he knew that when his original matter was finished the operators would be obliged to send whatever else was filed in the order of arrival. He pulled out a pocket

Bible and opening it at the first chapter of Genesis handed it to Mr. Worl with the remark: 'Just keep your men busy sending this until I get back.' Then he left. All day long he kept the wires busy, the operators working on the Bible pages whenever copy ran short, until he came back with more. The other correspondents fumed and raged, unable to get a word to their offices."

The telegraph today, however, appreciates that its duty is to the whole public, and what would be done in these times is very well expressed by the general counsel of the Postal Company, who a few years ago in giving an opinion on the precedence of messages, said:

"In the instance which you mention in your letter, namely, where one newspaper man filed his message to his newspaper and then filed a copy of the Bible to be transmitted, in order to keep out his competitors, I do not hesitate to say that you would have been justified, after transmitting his message, to return the Bible to him and request him to study the Christian charity therein set forth."

"No less remarkable was the achievement of the *Herald* during the Spanish-American War in publishing the first details of the destruction of Cervera's squadron off Santiago de Cuba by the American fleet. The usual foresight had provided for a corps of trained men, and had still further provided a fleet of despatch boats, one of which was always on station with the fleet. When Cervera's vessels came steaming out for the open sea on July 2, 1898, the *Herald's* despatch boat 'Golden Rod' was on duty, and the reporter on board her saw the entire action, which ended with the annihilation of the Spanish fleet. Then the "Golden Rod" turned and made for Port Antonio, Jamaica, to reach the cable.

"At that time a perplexing situation existed. The British government had refused the use of the cable at Bermuda for press messages. The only other channels of information were from Mole St. Nicholas, Hayti; Playa del Este, on Guantanamo Bay, where the censor would let nothing pass, and Port Antonio, Jamaica, which last named place was the headquarters of the *Herald's* fleet. The usual method of procedure was to file the copy on the land line there for transmission to Kingston, on the other side of the island, and thence by cable to Panama and Galveston, via Mexico, where it was placed on the land line for New York.

"The press rate for cable at Kingston was sixty-two and a half cents a word, 'collect.' Preferred press messages were at the same rate, paid on the spot. With the development of the situation, as the mass of war copy came in, astute correspondents began to pay commercial rates, \$1.63½ a word, 'collect,' so that their messages would get off ahead of the others. Then came some who were willing to pay this on the spot for preferred commercial rates, with right of way. And still the copy piled up, as the news from Santiago came, until correspondents who wanted to get their despatches through were paying double commercial rates—\$3.25 a word, 'collect.' This was the situation that confronted the late John Mitchell, superintendent of the *Herald's* telegraphic service, then stationed at

*Postal Telegraph.

Kingston, when the 'Golden Rod' dashed into Port Antonio that night of July 2, and the *Herald* correspondent, his account written during the trip, hurried to file his copy.

"The only way in which the story of the destruction of Cervera's fleet could get precedence and be sent immediately was to file it at the rate of \$3.25 a word, prepaid. Mr. Mitchell asked the *Herald* representative in charge what he should do. The reply was, 'This is a night to burn money. File it \$3.25 prepaid.'

"The clerk in the Kingston cable office wanted the money cash on the counter. Mr. Mitchell had no funds. The force finally began to send the message, protesting every little while. In the meantime the *Herald* man at Port Antonio had aroused Mr. Jones, the manager of the Boston Fruit Company and the *Herald's* fiscal agent, from his bed and explained the situation. Mr. Jones wired to Kingston that when the bank opened in the morning the cash would be ready. Mr. Mitchell stood over the cable operators, urging them on, and by nine o'clock the next morning the last word was through. The bank opened and Mr. Mitchell paid over the counter of the cable office \$5,500 in English gold. The *Herald* readers had the news, and, of course, not a line had gone over the cable to any other newspaper until the *Herald's* last word was sent."

Telegraphy in Shorthand.

The Chicago *Tribune* in a recent issue reported a Chicago news item, and in the next column showed how that news item was telegraphed to Detroit in Phillips code by Operator Charles Anderson of the Postal Company. To the man on the street it would seem almost an impossibility to make any sense out of the telegram as transmitted, and it is a tribute to the education and grasp of the average operator that he is able to abbreviate and translate so quickly, thus making for a very much faster service.

AS REPORTED IN THE CHICAGO PAPER.

When "Zummie," of Detroit, hears of a neat packet of his own letters tied by a pink ribbon to a suit for \$25,000 for breach of promise, he probably will think his cup of woe is running over. For yesterday Mrs. Ruth McLean Fee-Zumstein, his bride of a day, was arrested on a charge of bigamy.

"Zummie" is Arnold Zumstein, a real estate operator of Detroit. This is set out in the breach of promise action filed in Chicago by John J. McMahon and Leo J. Kramer, attorneys for Miss Helene Wohlford, a cabaret danseuse, not lacking in recent mention in the newspapers nor in personal charm. He is accused of breaking the heart of Miss Wohlford by marrying Miss McLean. Miss McLean is the daughter of Dr. Angus McLean of Detroit, who has been conspicuous in the world of surgery.

Zumstein and Miss McLean were married in Terre Haute, Ind., on Tuesday afternoon. But the mating was of short duration, for it was learned that Miss McLean, or more recently Mrs. Zumstein, was arrested on advices to the Terre Haute police from Chief Marquardt, of Detroit. Soon after Dr. McLean hurried to Terre Haute, obtained the release of his daughter and returned to Detroit.

The advices to the Indiana police were in effect that Miss McLean's marriage of September 17, 1915, to Joseph Fee has never been dissolved, and therefore her union with Zumstein was illegal. Zumstein, sued for \$25,000 in Chicago by the danseuse, and bereft of a bride in Terre Haute, could not be found in Detroit. But it was reported he was returning to his home from his wedding trip.

AS TELEGRAPHED TO DETROIT.

Wn "Zummie" o Detroit hears f a net packet of his own ltrs tied bi a pink ribbon to a suit for 25,000 for bop he pby wi tnk hs cup of woe is running ov. For ya Mrs. Ruth Day McLean Zumstein, hs bride oa day, was arrd on a chg of bigamy.

"Zummie" is Arnold Zumstein, a rl esta opr of Detroit. Tx set out d bop actn started in Ch bi Miss Helene Wohlford, a cabaret danseuse, not lackg in rent mentn d nups nor in psl charm. He is acud of bkg t hrt o Miss Wohlford mryg Miss McLean. Miss McLean is t dau of Dr. Angus McLean o Detroit wo hb kpx d wld o surgery.

Zumstein & Miss McLean wr mrd in Terre Haute, Ind., on Tuyp. But t mating was o short duration, fo iw lrnd tt Miss McLean, or m rntly Mrs. Zumstein ws arrd on adcs to t Terre Haute pox fm Cf Marquardt o Detroit. Sn af Dr. McLean hurried to Terre Haute, obd t release o hs dau & rtnd to Detroit.

The adcs to t Ind pox wr in f tt Miss McLean's mrj on Sept. 17, 1915 h nv bn dissolved & trf her unn w Zumstein ws ilgl. Zumstein, sued for \$25,000 in Ch bit danseuse, & bereft oa bride in Terre Haute cd nob fj in Detroit. Bt iwr he ws rtng t hs hm fm hs wdg trip.

Telegraph Oddities.

AN EYE TO BUSINESS.—The manager of the telegraph office at Tucson, Ariz., had his messenger boys feed the chickens of a local business man while the latter was on his vacation.

RATS FOR COMPANY.—An operator in a signal tower on the Pennsylvania Railroad near Middletown, Del., has trained a lot of rats to keep him company through the lonely nights when he is on duty. They have become pets.

BIG NOISE FROM A LITTLE PLACE.—A newspaper in a small town in one of the southern states is kicking up a row because it thinks the telegraph facilities are not adequate to take care of the needs of the 1,500 population. All it wishes is a direct wire to Washington, one to New York, as well as one to Atlanta. It would no doubt be amusing if we could learn just what the paper's notions are in regard to the volume of business handled from such a place to the cities mentioned. It is safe to say that there are not two messages going to either Washington or New York in every twenty-four hours.

MR. S. D. BARGER, manager, Western Union Telegraph Company, Los Angeles, Cal., writes: "Enclosed herewith is a draft for \$2.00 to pay my subscription another year. I hope it gets to you before you send out those customary 'We have renewed, etc.'"

Farewell Dinner to Mr. A. B. Cowan.

A farewell dinner was tendered to Mr. A. B. Cowan, recently appointed general manager of the Mountain Division of the Western Union Telegraph Company, Denver, Col., at the Auditorium Hotel, Chicago, November 20, and it was one of the most enjoyable affairs ever given to a departing comrade by the Chicago fraternity. It was attended by a most cosmopolitan body of telegraph men from the West, including representatives of all the departments of the company, railway telegraph superintendents and several visiting Western Union officials.

The gathering was highly expressive of the regard in which Mr. Cowan was held and the satisfaction which the organization feels in the advancement of one of its members. The success of the affair was largely due to the interest and activities of Mr. C. H. Gaunt, general manager of the Western Division, Chicago.

All of the addresses were expressive of the well wishes of the fraternity for Mr. Cowan's success in his new field, some of them in a humorous vein, but all indicating a deep regard for the attributes which have contributed so strongly to his advancement, namely, hard work, modesty, and the highest sense of duty. Mr. Cowan's reply to the addresses showed how appreciatively he feels toward those whom he believes have aided him, which demonstrates the principle that "He who honors others, honors himself."

The dinner was enlivened by some excellent singing. Songs of the day were re-written for the occasion, set to familiar music, and led by trained singers. General Manager Gaunt acted as toastmaster, and a touch of genuine surprise was given when he introduced Mr. A. R. McGrath, commercial manager of the Western Division, as "the successor of Mr. Cowan." There was hearty applause at the announcement.

A number of managers from important offices in Mr. Cowan's territory were present, old friends of his, who were given seats of honor. The officials of the commercial, traffic and plant departments of the western territory were all there and the gathering was a notable and inspiring one.

Toasts were responded to by Messrs. C. H. Gaunt, A. D. Bradley, W. McD. Milne, J. P. Edwards, A. R. McGrath, H. F. Dodge and P. W. Drew.

The following were present: A. B. Cowan, F. E. Serfass, J. P. Glennan, F. C. Siddall, W. W. Watt, E. Parsons, W. S. Wood, L. R. Robinson, H. Brown, P. W. Drew, G. D. Hood, C. H. Gaunt, A. R. McGrath, C. J. Eldridge, J. F. Morgan, W. McD. Milne, J. N. Armstrong, E. F. Sweetser, C. O. Kuhns, J. P. Edwards, W. W. Drew, C. H. Finley, C. D. McDermet, E. W. Springer, H. F. Dodge, J. W. Konigsmark, W. I. Lake, Chas. Gallagher, M. M. Rust, M. G. Himmes, M. P. J. Blesius, H. G. Grevin, W. A. Myers, J. H. Pendry, L. W. Mars-ton, J. R. Pierce, A. J. Fuller, M. J. Duggan, C. H. Shell, T. C. Bran-



UNIQUE FAREWELL DINNER CARD.

don, Chas. F. Hauth, W. F. Webber, C. J. Phelps, R. S. Gill, H. G. Heininger, C. E. Willoughby, A. L. Ewing, J. A. Kennedy, J. D. Clark, F. D. Bermke, N. G. Nelson, E. Jordan, W. R. Drummond, S. J. Friel, C. W. Askelof, W. D. Munro, J. R. Page, J. D. Campbell, G. C. Mason, W. D. West, H. C. Weston, E. C. Schaefer, all of Chicago; A. D. Bradley, A. Young and R. W. Keat., Minneapolis, Minn.; F. A. Mohr, Milwaukee, Wis.; F. D. Milne, New York; H. C. Chace, San Francisco; A. C. Cronkhite and W. J. Armstrong, St. Louis; H. J. Kinnucan, Detroit, Mich.; J. C. Nelson, Indianapolis, Ind.; A. A. Montgomery, Cincinnati, Ohio; M. D. Combs, Cleveland, Ohio; D. J. McLoraine, Davenport, Ia.; L. L. Miller, Springfield,

Ill.; W. Howard, Peoria, Ill.; E. W. King, Quincy, Ill.; F. J. Kearney, Dubuque, Ia.; H. F. White, Cedar Rapids, Ia.; L. W. Ainsworth, Des Moines, Ia.; J. P. O'Donnell, Sioux City, Ia.

OBITUARY.

W. B. BRADFORD, aged eighty-six years, an old time telegrapher, and for many years manager of the Western Union office at Worcester, Mass., died in that city December 1.

S. T. ARMSTRONG, aged seventy-six years, a member of the United States Military Telegraph Corps during the Civil War and prominent in telegraph circles in Tacoma and other Washington centers for the past twenty-five years, died in Seattle, Wash., November 7.

NEIL STEWART, aged eighty-eight years, died in St. Louis, Mo., of pneumonia, on November 19. He was foreman under Col. R. C. Clowry, of the United States Military Telegraph Corps, during 1863 and 1864, and occupied a like position under Col. Clowry when the latter was superintendent of the Western Union Telegraph Company at St. Louis.

SAMUEL H. BECKWITH, a famous civil war telegrapher, died at the soldiers home in Hampton, Va., December 7. Mr. Beckwith handled all of the cipher dispatches of General Grant during the Civil War, and he always held the deceased in the highest esteem. He was for many years a resident of Utica, N. Y., but owing to impaired health he went to the home at Hampton in January, 1914. His dispatch book was filled with copies and originals of war telegrams and his recollections of Grant, Lincoln and other great figures in the war were vivid and interesting.

Creed and Company.

The firm of Creed, Bille & Co., Ltd., Croydon, England, makers of the Creed automatic printing telegraph system, has reverted to the name originally adopted by the company, i. e., Creed & Co., Ltd. The company has purchased the entire printing telegraph business and patents of Mr. Donald Murray, and has also secured the services of Mr. H. H. Harrison, the well-known telegraph expert and inventor, as chief of its technical staff. All British printing telegraph systems will henceforth be manufactured under one roof.

The directors of the company have purchased from the Indo-European Telegraph Company and Galletti Wireless Telegraph and Telephone Company, patents in wireless telegraphy, as well as all their wireless plant and apparatus in England.

The Indo-European Telegraph Company has a considerable financial interest in the Creed company will have two directors on the board.

Mr. T. W. Stratford-Andrews, managing director of the Indo-European Telegraph Company, has accepted a similar position in the Creed company, and Mr. Creed, who will remain chairman, will devote himself fully to the technical affairs of the company. Mr. Donald Murray has joined the board and the company will therefore have the advantage of his assistance in its future developments.

Proposed Change in By-Laws, Telegraph and Telephone Life Insurance Association.

The following proposal to change the By-Laws of the Telegraph and Telephone Life Insurance Association, dated October 5 and signed by President W. H. Baker and thirty other members, has been filed with the secretary of the association:

"We, the undersigned, members of the Telegraph and Telephone Life Insurance Association, in accordance with resolution passed at a meeting of the executive committee held this date, hereby propose to amend Section XIII of the By-Laws by inserting the words 'or beneficiaries' and the words 'provided that such death shall not have been caused by suicide, whether sane or insane at the time, within one year from date of admission to membership,' also the words 'or persons,' so that it shall read as follows:

SECTION XIII.

"Death Claims—How Ascertained and Paid.

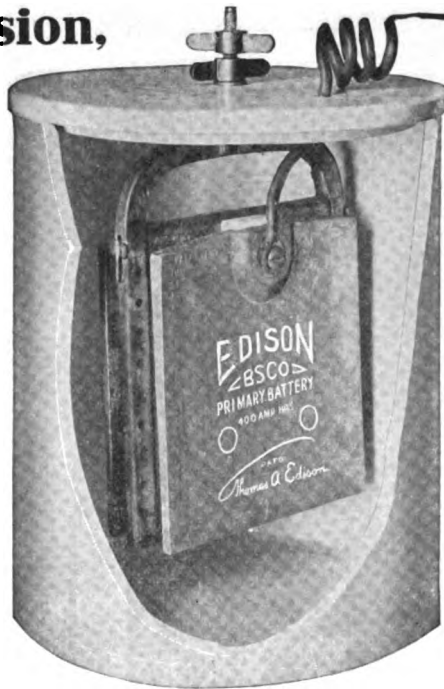
"On the death of a member in good standing, in either or both grades, the treasurer shall, under instructions from the executive committee, on application of the beneficiary or beneficiaries, within sixty days after the verification of the claim in the manner that may be required by the executive committee, pay over to the beneficiary or beneficiaries, or their legal representatives, for Full Grade membership, \$1,000, for Half Grade, \$500, for both grades, \$1,500, taking proper receipt therefor; provided that such death shall not have been caused by suicide, whether sane or insane at the time, within one year from date of admission to membership. In case the person or persons named as beneficiaries shall have died before the death of the member, the claim shall be payable to the estate of the deceased member. The claims of the beneficiaries of persons, who have been members in good standing for one year next preceding date of death, shall be regarded as indisputable and shall be paid without question; the object of this provision being to secure members of one year's standing against any charge subsequent to death of irregularity in their admission papers."

Insurance vs. Investment in Serial Building Loan and Savings Institution.

Many telegraph people have lost their Royal Arcanum insurance at a time in their lives when they are too old to obtain other insurance. One individual who paid the Royal Arcanum during the twenty-six years of his membership \$1,485 now learns that if the same amount of money had been paid into the Serial Building Loan and Savings Institution, he would have to his credit today, drawing five per cent interest, the sum of \$2,530. This is a very valuable lesson to everyone. All the man obtained for his expenditure of \$1,485 paid to the Royal Arcanum was protection during his membership. A man is protected all of the time when he invests in the Serial Building Loan and Savings Institution and he is not frozen out when he reaches the old age limit. Besides this the money on investment is always available in cases of emergency. One must save to pay for such benefit as the Arcanum affords. It is better to save for your own benefit.

Clear Transmission, Always Necessary, Warrants Use of the Highest Grade Battery

A low internal resistance battery that will not polarize, and maintains constant voltage, is sure to give better results in telephone work than a set of cells whose voltage constantly drops when on discharge, or in which the voltage is high or variable.



The Edison Primary Cells

maintain a lower uniform internal resistance than any other primary type; they furnish constant voltage and do not polarize at normal discharge rates; the 400 ampere hour size has a life greater than twenty single sets of dry cells and they require no attention between recharges, even though the service is such that a period of years is required to consume their capacity.

Type 403 400 Ampere Hours Capacity

Improve Your Service by Installing Edison.



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247 Lakeside Avenue
ORANGE, N. J.

HALL SWITCH AND SIGNAL Co.

New York

Chicago

MANUFACTURERS OF THE

GILL SELECTOR

THE UNIVERSAL SELECTOR
FOR TELEGRAPH AND TELEPHONE

KERITE

Out of the experienced past,
into the exacting present,
KERITE through more than
a half-century of success-
ful service, continues
as the standard by which
engineering judgment
measures insulating value



KERITE INSULATED WIRE & CABLE COMPANY
NEW YORK CHICAGO

THE RAILROAD.

Mr. H. C. CHACE, division superintendent of the Western Union Telegraph Company, San Francisco, Cal., has accepted the position of superintendent of telegraph of the Santa Fe System, with headquarters at Topeka, Kan., vice L. M. Jones.

MR. JAMES A. JONES, chief clerk to the superintendent of telegraph, Southern Railway, has been promoted to the position of superintendent of telegraph of the same road with headquarters at Washington, D. C., vice W. H. Potter, transferred to other service.

Transposition Systems.

The problem of providing a satisfactory system of transpositions in connection with pole lines on which there are both telegraph and telephone circuits is a difficult one to solve, due principally to the induction that is likely to be obtained from the telegraph circuits, reported the subcommittee on transposition systems and phantoms at the St. Paul convention of the Association of Railway Telegraph Superintendents last June.

Certain of the telegraph circuits have high voltages in connection with them and send out very rapid and irregular impulses. Of course, some of this trouble can be avoided or greatly reduced by the installation of apparatus in the telegraph circuits which will round out the impulses, thus making them less noticeable on the telephone circuits.

In general it appears necessary to transpose telephone pairs oftener on the pole line on which there are both telegraph and telephone circuits as compared with a pole line on which there are only telephone circuits. In some cases, it would probably be advisable to separate the telegraph and telephone wires by placing them on different pole lines. This plan obviously cannot be followed except where there is a sufficient number of wires to justify two pole lines.

Considering the rapid growth of the use of the telephone on railroads and the probable additional growth in the future, it is absolutely essential to have a satisfactory and adequate system of transpositions to take care of these telephone circuits. A system should be provided to take care of at least forty wires and, of course, in some cases it would be necessary to take care of a larger number of wires. It would seem feasible to provide possibly for twenty wires and another system for a larger number of wires. A system for twenty wires would be applicable to a considerable mileage of pole lines in this country. Any system developed should endeavor, as far as possible, to minimize the number of changes necessary in physical circuits when phantoms are cut in. The railway companies in placing any wire on a pole line, should always have in mind its possible use in connection with the telephone circuit and endeavor to place the wires on regular positions for transposing. Also, any transposition system adopted should use eight-mile sections with a view of the possible loading of telephone circuits.

MUNICIPAL ELECTRICIANS.

MR. ADAM BOSCH, superintendent of fire alarm telegraphs, Newark, N. J., has requested that he be retired on March 1, 1917, after a service of forty-one years. He has always taken an active interest in the affairs of the International Association of Municipal Electricians, and was a regular attendant at the conventions. Mr. Bosch has an enviable reputation for loyalty and fidelity to the interests intrusted to his care and has a large number of friends who will wish him much enjoyment in his well-earned rest. Mr. Bosch is seventy-six years of age.

KEY FIRE BOXES IN NEW YORK.—Fire Commissioner Robert Adamson of New York City states that the last of the old-fashioned key fire alarm boxes will be abolished soon. There are 269 of these boxes in Queens and Richmond boroughs.

POLICE TELEGRAPH IN SOUTH ORANGE.—Specifications for a police telegraph system have been approved by the South Orange, N. J., township committee, and bids for the installation of the system will be received December 19. An appropriation of \$3,000 has been made for the system and office equipment.

FIRE ALARM PATENTS.—Patents have recently been granted for fire alarm apparatus to D. P. Gosline, of Boston, Mass., on an automatic alarm transmitter; to P. McDonough, Braddock, Pa., apparatus for school houses, hotels, dwellings, etc.; to O. A. Algeni, Providence, R. I., for a thermostatic device, and to E. L. Thompson, of Dover, N. J., for means of transmitting fire alarm signals over regular telephone circuits automatically.

Automatic Telegraph Repeater.

Mr. J. McKeon, of Great Falls, Mont., has invented and patented a repeater which has for its purpose the improvement and simplification of the general construction and adjustment of telegraph repeaters.

Two of the instruments comprise a full set of repeaters and require only two local batteries. They take up the same table space as two ordinary telegraph relays, and their adjustment is about the same as with ordinary apparatus. There is no armature as in the old repeating sounder method, and they are quick to break. Speed is one of the real advantages obtained. In case of failure of local current the main line wires will remain closed. By employing two double-throw, double-pole switches, two of these instruments can be used either as single line repeaters, or as a duplex-single-line combination.

Mr. G. D. Butler, formerly manager of the Western Union Telegraph office at Rochester, N. Y., writes: "It affords me pleasure to renew my subscription to your excellent paper. Although retired I have by no means lost my lifelong interest in the continued success of the telegraph service, and the welfare of a host of friends who are still giving it their earnest loyal support and who are so often referred to in the interesting columns of the AGE."

EDUCATIONAL.

The following questions are based upon the Educational articles published in our December 1 issue on inductance and capacity and antenna circuits. Students should revise the articles and answer the questions. Such treatment is a great stimulus to the acquirement of knowledge, and is recommended as one of the best means to make progress in any study. Besides, it makes study a pleasure, as there is nothing so interesting to one who desires knowledge as to ask and answer questions.

QUESTIONS ON INDUCTANCE

What analogy exists between inductance and the inertia of a stream of water?

Can a magnetic field be established around a wire without a current in the wire?

When the current in a wire is increasing does the magnetic field around the wire expand or contract?

What is the effect of the movement of magnetic lines of force on a wire?

What is self-induction?

What is mutual induction?

What is the name of the unit of self-induction and mutual induction, and what is its value in electrical terms?

QUESTIONS ON CAPACITY

What is a dielectric?

Upon what does the capacity of a condenser depend?

What is the unit of capacity?

What is a simple form of condenser?

Does the thickness of the dielectric separating the plates affect the capacity of a condenser?

Has air a greater or less inductive capacity than a solid or liquid dielectric, the dimensions of the condensers being the same?

How are the plates of condensers connected to form the terminals?

QUESTIONS ON ANTENNA CIRCUITS

Does the capacity of antenna wires increase directly as the height increases?

Should antennas be as high as possible?

Is the capacity of a number of antenna wires close together as great or less than the sum of the capacities of the individual wires?

Cross Talk and its Cure.

When two telegraph or telephone lines are strung for any distance parallel to each other and current is flowing in either, a current is induced in the opposite direction in the other. The result of this induced current is "cross talk" on metallic telephone lines and in the case of grounded lines there is no way to overcome the trouble.

Transposing the wires of a metallic current will remove the trouble.

The current in the metallic line is in an opposite direction to that of the disturbing wire and since the transposition of the metallic line causes the induced current to flow in first one direction and then another, these currents will neutralize each other, and as the transpositions are cut at equal distances apart, the pressure of the currents is the same and

therefore no currents will flow through the receivers at each end of the line and the line will be unaffected by outside influences as long as the balance of the line itself is maintained.

In cases where there are more than one metallic line on the same poles, all of them must be transposed, but not at the same place, as in this case there would be no difference in the relative position, and the effect would be the same as though they had not been transposed at all. There are several systems of transposition, but they are all only slightly different roads to the same end. The method of transposition most frequently employed is to transpose at every tenth pole beginning with the pole nearest the office and counting it as No. 1, next No. 2, and so on. Begin with the tenth pole in the following order: A. B. C. B. A. B. C. B. keeping this system up all the way to the other end of the line disregarding any branches that may tap the line, and when the marking is finished the transposing is to be done. Each line is therefore transposed at either just one-half or twice the distance of the next circuit to it.

It is necessary to use what is known as transposition insulators when doing this work. These are the same as the ordinary insulator except that they have two grooves for the wire instead of one. This work should be carefully done and will be found to cure immediately the very common and annoying trouble known as "crosstalk." It will also cure inductive noises caused by lines paralleling power or telegraph wires.

QUESTIONS ON CROSS TALK

When a current is flowing in one of two parallel wires why does it induce a current in the other wire and why is the induced current in a direction opposite to that of the original current?

Why can cross talk be eliminated on metallic circuits and not on grounded circuits?

Does a steady, direct current induce a current in another wire?

Assume a line of two wires, what is meant by transposing them, and what is the effect of the transposition?

When there are several wires on one line of poles should all the transpositions be made at the same point along the line?

How is the actual transposition of wires effected?

Does transposition cure inductive noises on lines paralleling telegraph or power lines?

The Primary Battery.

A piece of zinc and a piece of carbon are immersed in the proper solution or electrolyte, and connected together with a wire which causes a current to flow from one to the other and the zinc is consumed by the solution more or less rapidly. Zinc and carbon are the substances in common use; but others can be used.

The current flows through the liquid from the zinc to the carbon and outside of the liquid from the carbon, through the wire to the zinc. No current will flow unless the carbon and the zinc are connected by a wire and when disconnected the zinc

is slowly eaten up by the solution. When the connection between the carbon and the zinc is not made by a wire, or if the wire is severed between them, the circuit is then said to be open and when the connection is complete, the circuit is said to be closed. The zinc and the carbon constitute the two poles, or electrodes, of the battery; the zinc is called the negative terminal and the carbon the positive terminal.

The form of battery which is not designed for continuous work—the circuit being open most of the time—is termed an open-circuit battery and is used for intermittent work in ordinary telephones. The closed circuit battery is employed in telegraphy and for telephone switch-boards, as they are in constant use.

The internal circuit of a battery is that part which passes through the liquid. The external circuit of a battery is that part outside of the battery represented by the wire connecting the two poles, or electrodes. The resistance which a battery offers to the passage through it of the current is termed the internal resistance.

The carbon is said to be the positive pole, because it is the first one into which the electricity passes after the electrical condition has been set up by the chemical action of the solution upon the zinc. The zinc itself is negative, because its terminal is at a lower potential than that of the carbon. When the carbon is connected by the wire to the zinc in the external circuit, this difference in potential causes a current, and the electricity flows from the positive carbon to the negative zinc, and continues as a current as long as the connection is maintained and the chemical action is kept up.

Electricity is not generated. It exists everywhere, manifesting itself when conditions are favorable to make operative the laws by which it is governed. In verbal intercourse, the phenomena of electricity, caused to manifest themselves by chemical or mechanical means, are referred to as "generating" electricity, and this term has the sanction of custom, although it must not be considered in its literal interpretation.

The current given by the battery is equal to its electromotive force, or voltage, divided by the sum of the external and internal resistance.

Batteries are required for two purposes in connection with a telephone system—for operating the signals at the distant offices and for speaking over the telephone circuit. In both cases the time that the battery is actually in use is very short, and the intervals during which the battery is not required may be very long; hence, it is desirable to employ cells in which all action ceases when they are not in use.

QUESTIONS ON THE PRIMARY BATTERY

In a primary battery is the zinc or the copper electrode consumed by the solution?

Does all the current generated in a primary cell flow through the external wire only?

What electrode constitutes the negative terminal and what the positive?

What is meant by the internal circuit of a battery and what is the internal resistance?

Why is the carbon called the positive pole, and why is the zinc called the negative pole?

What is the cause of a current of electricity?

In the external circuit does the current come from the carbon or zinc pole?

Is it correct to say that electricity is "generated"?

How do you ascertain the amount of current given out by a battery?

Index Notation.

Electrical engineers having to deal with quantities requiring in some cases very large numbers and in other cases very small numbers, to express them, a system of index notation is employed in order to obviate the use of long rows of ciphers. In this system the significant figures only of a quantity are put down, the ciphers at the end, or (in the case of a long decimal) at the beginning, being indicated by an index written above. Accordingly, we may write a thousand ($= 10 \times 10 \times 10$) as 10^3 , and the quantity 42,000 may be written 42×10^3 . 720,000,000 may be written 72×10^7 .

Fractional quantities will have negative indices when written as exponents: Thus $\frac{1}{100}$ ($= 0.01$)

$= 1 \div 10 \div 10 = 10^{-2}$. And so the decimal 0.00028 will be written 28×10^{-5} (being $= 28 \times 0.00001$). The convenience of this method will be seen by an example or two on electricity. The electrostatic capacity of the earth is 630,000,000 times that of a sphere of one centimetre radius, $= 63 \times 10^7$ (electrostatic) units. The resistance of selenium is about 40,000,000,000 or 4×10^{10} times as great as that of copper; that of air is about 10^{26} or

100,000,000,000,000,000,000,000,000 times as great. The velocity of light is about 30,000,000,000 centimetres per second, or 3×10^{10} .

QUESTIONS ON WIRE TESTING.

(From page 380, "Pocket Edition of Diagrams and Complete Information for Telegraph Engineers and Students," by Willis H. Jones.)

What is the cause of the escape of current from wires in wet and foggy weather?

What is the usual method of testing a leaky wire that is unworkable as a quadruplex circuit?

If, while the home end of the conductor is grounded, the meter shows, for instance, ten milliamperes, what does it indicate?

What is the cause of a current on a wire when the wire is grounded at the home station and open at a distant point?

Is the volume of "escape" current, as indicated by a meter or a single line relay, any measure of the working value of a wire assigned to quadruplex service?

What other condition must a wire chief allow for when two wires are crossed and one of them is opened to clear the other?

Does a static charge on a multiplex circuit affect the operation of the circuit?

If two wires of equal length and size are crossed and one is opened at each terminal what will be the static effect on the working circuit?

Efficiency Engineering in the Telegraph Service.

(Continued from page 557, December 1)

Every man wishes to sell his services to the highest bidder. He desires to obtain full value for the time devoted to his employing interest. Sometimes the employer has to accept the word of the applicant as to the value of the services to be rendered and frequently the seller has overestimated his ability and the buyer is at a loss as to how to rid himself of the poor bargain he has made. Many claim that a man is worth all that he can get, but is this true? Not in every case. The eternal principle of *quid pro quo* enters into the situation and a man cannot continue indefinitely to receive more than he earns. It is impossible to get something from nothing. The owner of the property has a right to a reasonable profit on the services of his employees, although this is frequently denied him. A corporation is just as much an employer as an individual. It may be organized to serve the public which makes it in that case a servant of the people, but it is amenable to the same laws as is the individual. It can sue and be sued.

A splendid article on individual efficiency appears in a recent issue of the London *Electrical Review* and is as follows:

To be a successful superintendent or manager a superior quality of character and intellect are necessary. This will give a natural leadership over the average man. A sense of superiority will give a manager confidence. He will feel his dignity, and be proud of his position, and there is no harm if he is slightly puffed up with a sense of his own importance, provided he does not carry it too far, and suffer from swelled head. This would make him ridiculous, and no one in authority can afford to have those under him snickering at him behind his back. His character and abilities must be such as to command their respect.

To be too intellectual is not desirable. Such a man is apt to look too far ahead for the best method, quite forgetting that it is the common-sense, practical method, adopted quickly, that is wanted. A very intellectual man is apt to become a recluse, a student of books rather than of human nature, and while such tastes may benefit a professional man, what we are considering is the best type of man to manage other men. It is better for a manager to leave the study of technical details to an assistant, whose duty must be to keep him informed of new improvements, and where to get the best information quickly. A strong will is absolutely necessary, and also the ability to put up a good fight, if required. A peace-at-any-price man will always be imposed on. A continual fighting attitude is, of course, bad. It will repel any thought of offering help from others and drive away good assistants. The employee must feel that the manager's interests and his own are similar, if not identical, to insure satisfactory and harmonious working. Firmness without despotism and the insistence of orders being carried out is what is wanted. The willingness to accept responsibility must go with a strong will. Unless he has pluck a manager will be afraid to take any risks for fear of a venture turning out badly.

Big successes are mostly obtained through taking risks. There is the strong temptation to throw the blame on a subordinate for an unsuccessful venture. To blame when the failure is due to the subordinate disobeying orders or showing lack of skill is just, but if this is not the case it is bad policy. If done repeatedly the best of the assistants will either leave to obtain fairer treatment or refuse to take an interest in their work.

A magnetic personality is a gift which is invaluable in dealing with directors, committees, or employees. If one is deficient in this respect a persuasive eloquence must be attained to take its place. The art of speaking well and in such a manner as to convince your hearer that your desires or plans of action are the correct thing and what should be carried out, is worth a good deal in business. The person may realize afterwards that you are wrong, but meanwhile he has agreed to what you want.

A mean, petty spirit is to be avoided. The minute attention to details will probably result in the firm saving pence and losing pounds. It is right and proper that the rank and file should exercise economy in the use of material, but the seeing that they do so should be left to an assistant, and only occasionally receive the attention of the manager. The fidgeting over trifles irritates the staff and prevents the manager attending to the big things in business life. He should not suffer from a chronic bad temper, or be perpetually on the go. The former will breed indifference among the employees, while the latter gives him no time for the quiet planning which is necessary. Both are signs of nervous tension which should be improved either by a holiday or by a changed method of living. A manager must have a "thick skin." A sensitive man who is hurt by pin-pricks is no good for a high position. The higher the position the more one is subject to attacks, and to be badly affected by them impairs one's efficiency.

A good memory is a valuable asset, and anyone may make considerable improvements with or without the use of any special system. Thought control is a great help to efficiency. It gives one the power to exclude all other matters except the one requiring immediate attention, and when away from business to forget all about it, thus giving the mind a necessary rest.

Nothing absolutely ideal is to be expected in this world, and no man possesses all the qualities that have been enumerated. This, however, does not prevent any official or would-be official from glancing through the list, noticing something that he is well aware that he is rather lacking in, and determining to acquire, as far as possible, this aid to efficiency.

(To be continued)

"CORRESPONDENCE SCHOOL LESSONS IN TELEGRAPHY" is, in itself, an education in telegraphy; it should be studied by all who desire to better their positions. It gives information of the highest importance in clear and easily understood language. Price \$2.00 per copy. Sold by TELEGRAPH AND TELEPHONE AGE, 253 Broadway, New York.

MR. JEFF W. HAYES' DEPARTMENT.

Copies of each issue of TELEGRAPH AND TELEPHONE AGE may be purchased at the office of W. T. Plummer, Room 901, Postal Telegraph Building, Chicago. Mr. Plummer will keep a supply of each issue on hand to meet every demand.

Speculation.

We will call him Oscar Schneider, for that was not his name.

Oscar was general manager of a telegraph office out West.

Although general business was booming, Schneider's office showed increasing deficits each month.

Every old and plausible excuse was made to the superintendent until that vocabulary was exhausted and Schneider was biding the time when a successor would be appointed.

"Come, buy a set of Henderson's 'How to Create, Retain and Improve Business.' It will teach you how to meet the public, how to properly solicit business, how to make your company popular, how to increase your own salary 100 per cent."

Thus spoke Erastus Byzicks to Oscar Schneider, and the latter ready to grasp at any straw which might avert a loss of his position became an immediate purchaser of Henderson's wonderful work.

"A daily study of this work will place you far ahead of your competitors and business will come to your office from all sides."

This was the final argument which Byzicks gave out and \$34 speedily changed hands.

Oscar Schneider placed the new books, which were so full of promise, in a conspicuous place where they would attract the attention of his competitor, as he passed by, with a view to filling that individual with fear and jealousy, fear for a prospective loss of business, and jealousy, because he was not in possession of all this information which was destined to cause him so much business disaster.

The themes talked of in the new work were heavy and were couched in technical language.

One item after another in the book was skimmed over by Schneider who was used to light reading only and the study of such abstruse problems as: "How to convince a prospective customer against his will," "Making more money for your company," made his head ache.

The words were too long, the terms could not be understood without the constant reference to a dictionary, and the whole subject became very distasteful.

"I wish I could sell these books to Byzicks for \$3.40," he exclaimed. I really believe I would do it.

The book agent had, however, left the city and Henderson's wonderful books which were to insure a lifelong position for Oscar Schneider lie out in the battery room with a pile of rubbish, uncared for and unread.

Schneider has gone to pastures new and more congenial.

Every wide-awake telegrapher is a subscriber to TELEGRAPH AND TELEPHONE AGE.

The Pleiades Club.**CHAPTER III.**

It was certainly a choice gathering of spirits who flocked together at Telegraphers' Tabernacle to listen to the doings of the boys from Dixie who were members of this honorable body.

Fred B. Moxon, courtly and affable as of old, called the meeting to order.

Mr. Moxon explained that the meeting was called for the purpose of having a pleasant time and everyone was cordially invited to say something.

"Is Bob Irwin, 'Canada's fastest man,' present?" came an inquiry from Dave Ryan.

"No, Bob and Aleck Sinnot went a-fishing this morning down to Hesperian canal, but we expect to see them back very soon."

"I say, Dave," queried Kentucky George Ellsworth, "how about that story that Brother Topping tells about you when you were on General Bragg's staff? Did the general really cease hostilities on a certain occasion till you could be located?"

"Just you read United States history and get better acquainted with me," testily replied Ryan. But a smile speedily lit up the old war horse's face when he recognized the president of the meeting.

"Well, if there isn't Fred Moxon, whom I left in St. Louis in 1875. Glad to see you, old boy; do you remember how you used to paste me when I was down there in Galveston? I tell you what, to take you and fight those native mosquitoes was a bigger job than fighting under General Bragg."

"Yes, Dave, you remember how that old Long Horn wire used to work and how those repeaters at Denison would rattle? The man in charge of the Denison repeaters went to sleep one night and I could not hear you break."

"I never broke in my life," interrupted Ryan.

"That's right, too," agreed Moxon and the only way I knew you were getting me was to ask New Orleans."

"Same old stunt," broke in Cy Whitaker, who just arrived and took a seat in front.

"Why, here is Ed Whitford, is he in our class?" asked "Fid" Powers.

"Yes, he is eligible, for he worked two winters in New Orleans. Let him sit down, as I have one on him, suggested Dick Babbitt.

"Sit down, Ed, you are welcome at our festive board. I want to tell the boys of the joke you played on me once upon a time.

"I dropped into the Chicago office to get acquainted with the boys and see what new things had been introduced. Whitford was always the master of ceremonies in the Chicago office, doubtless because he could always see a funny side to everything.

"Look at this big ground wire," said Whitford, pointing to the iron pillar, which ran from floor to ceiling, the only obstruction in the big room. "Yes, this is the ground wire which grounds every wire in Chicago and oftentimes holds millions of volts. There is enough electricity in the ground wire at this minute to completely annihilate an entire army

if applied in the proper way; yes, this ground wire is one of the institutions of Chicago.

"Want to see some good receiving? Well, come here and witness the finest operator in the world. He can copy 100 words behind as I will show you."

Going up to Jack Carroll, who was receiving a special from Luke Fisher, at Omaha, Whitford grabbed Carroll's hand which he shook for two minutes, Fisher sending at top notch speed.

Releasing his hand, Carroll took up a new sheet and began to copy just as if he had not been interrupted.

"Wonderful, wonderful," ejaculated the spectators, "but we did not know that Jack had a time in squaring himself with Luke Fisher to get him to repeat the missing portion.

"Yes, Ed, you were always on hand like warts when it came to going to the annual reunion of the Old Timers, too," said Billy West, who arrived at this juncture, high hat and gold-headed cane.

Glad to see you again, Bill," shouted many voices.

"Gentlemen, let us quit shop talk for a few minutes and see what the latest is from the seat of the great European battle ground.

"I say, Mr. Chairman, can you tell me if Ethiopia has joined the allies," questioned Jim Taylor, a recently arrived colored employe from Minneapolis.

"Yes, you bet; I could make out a battalion marching north and they were carrying the national flag of Ethiopia," remarked Charlie Newton, as he sauntered in.

"What am the flag of Ethiopia?" asked Taylor.

"Why, it is a picture of a watermelon cut in halves on one side of the flag and a ham bone on the other side," laughingly replied Newton, and a burst of merriment ensued.

"I have been practicing with mirrors," began Moxon, and I find that I can bottle up and concentrate enough of the sun's rays to completely vaporize any intruding battleship 100 miles at sea. We turn on our searchlight, which is equal to a billion candle power and signal for her to turn back. Upon her refusal to do so, the bottled up energy of the sun is turned on and presently a smoke arises which in five minutes is lifted and nothing can be seen of the unfriendly man o' war.

"I am in telepathic communication with my old partner, who is still a resident of the terrestrial sphere, and we are able to convey much intelligence in this way to each other. I have already given him the dope on this new idea and you will find that the matter will be given the widest publicity on earth.

"I notice we have with us Col. Tally Mann, once of Sherman, Jack Taylor of Galveston, Ed Davis, David Flannery, Charlie Patch, Jim Stacey, Jack McDonald, Jimmie Rust, Jack Sinclair, Jack Graham and Phil Fall."

At the mention of each name a cheer went up, each gentleman arising and making a graceful bow.

Bob Irwin, "Canada's fastest," put in an appearance now with a string of Dollie Varden trout which he stated he had caught over in the Hesperian canal.

"No, I did not subsidize any small boy, either," warmly remarked Irwin, "for I am a fisherman from way back."

"Yes, you used to catch catfish on the Mississippi below St. Louis," said John Topliff as he bobbed to the front.

"I never contradict my chief operator; you taught me that stunt," retorted Irwin, and all the St. Louis contingent laughed to the echo.

"I never liked that story that Dick Babbitt propagated about David Flannery. You remember that one about 'Jobs and Positions.' I never liked it and I am going to tell Dick so."

"I plead guilty," said Babbitt, adding "and I throw myself upon the mercy of the Court." This remark was made with mock solemnity, which evoked an "Aw, forgit it" from Davis.

The band, of which Ed Leloup was the leader, discoursed some stirring Southern melodies, after which the meeting took the form of a general social feast, many introductions being made.

There was no bickering, no quarrelling, no riotousness on the planet Mars. Surely everyone was supposed to forget all these ere they could remain in peace in this delightful haven of rest.

Everything was so harmonious here that few cared to leave its delightful precincts until lapse of time urged him for a higher climb.

To the lover of music, music was everywhere; to the student of literature, the universe was an open book, always ready to instruct an earnest student; to the inquirer after the arts and sciences, Mars gives ample opportunity for study and advancement, but to the person who makes inquiry after the pleasures of the flesh, a big and emphatic "No" is given. Mars and its inhabitants are built on different lines.

Pardon being asked for and granted for this diversion, Chairman Moxon announced that the next meeting would be held under the auspices of the old Chicago office, which announcement created a whirlwind of applause.

Lara Boone and Hank Spencer then sang, "Oh, Where is My Wandering Boy Tonight" and the meeting passed into history.

Helena, Mont., Notes.

Helena, which is pronounced, "Hell-e-na," and not "He-lee-na," is one of the highest offices in the country, in both altitude and salaries paid.

Before the advent of the Northern Pacific Railroad, Helena was almost isolated from the remainder of the world. Its rocky fastnesses and its lofty heights are almost completely covered by snow during the winter months. To this snow and rock-ribbed city, once almost inaccessible, the telegraph was a highly important factor prior to the building of the railroad. In the year 1880 W. W. Fredericks was manager. National election day came, but it was four days after the election was over before it was known in Helena who was the successful candidate for president, the single wire to that place being prostrated.

The coming of the railroad converted Helena into a relay office for both the Western Union and the railroad and many an operator of national renown came to and went from this office.

Maurice Brick tarried here with the railroad company during the trying days of 1883, and we

had the unmistakable pleasure of working a wire from Wallula with that artist about this time.

Chas. H. Gaunt inaugurated his class in higher mathematical and electrical science in Helena, his colleagues becoming prominent in railroad and telegraph circles.

Charles T. Day succeeded Mr. Fredericks, who in turn gave way to James Swan, he being succeeded by William Taylor, now retired from the service but still a resident of this city.

Chas. E. Davies, now traffic superintendent of the Great North Western, Toronto, Ont., received preliminary training in Helena.

W. N. Fashbaugh, vice-president in charge of traffic of the Western Union, worked at one time as a traffic supervisor in Helena.

Helena office of today is under the management of R. E. Peters. Mr. Peters was recently in charge at Missoula, Mont., and is a careful and efficient manager. He is ably assisted by the following: Mrs. N. J. Thomson, assistant manager; Mrs. H. G. Heston, bookkeeper; Margaret Benson, delivery clerk; Bertha Greer, file clerk; Lewis Bossler and Nellie Jones, counter clerks.

One of the handsomest and most "up-to-the-minute" offices in the country is Helena Western Union. It can be seen at a glance that a master hand has control of this office. Everything around the operating room is in ship-shape order and there prevails an air of business and harmony. Helena has seven printer circuits; three multiplexes to Spokane, Salt Lake and Minneapolis; four Morkrums to Chicago, Great Falls, Billings and Butte.

C. C. Maxson, still quite youthful, is the chief operator. He is a scholar, a student and a gentleman, and while being a splendid disciplinarian is at the same time very courteous and fair minded.

Al Cullen, night chief, is the dean of Montana operators and one is always much edified and enlightened by an hour's talk with Mr. Cullen on old time Montana topics.

Geo. O. McNeerney, wire chief, is one of God's noblemen and he will be much missed when he leaves for his northern ranch.

That sterling old timer, Wm. H. Bellmain, is still employed in this office and is just as young as he used to be.

The names of those in the traffic department are A. Cullen, night chief operator; W. K. Thomson, late night chief operator; B. Z. Kastler, wire chief; J. W. Stoker, assistant wire chief; T. F. Barnett, automatic chief; R. C. Preston, G. W. Klaisner, Owen Yerkes, H. E. Heston and E. B. Oleson, printer chiefs; J. A. Davidson, C. C. Carpenter, A. M. Chambers, Pearl Romig, Flora Simpson and Bessie Lanyon, multiplex supervisors; W. G. Hyde, A. M. Chambers and Nell McGinnis, Morkrum supervisors; Russell Watson and T. C. Cooper, Morse supervisors; twenty-seven Morse operators, forty-four Morkrum operators, twenty-one multiplex operators, three checking clerks, three file clerks, and a time clerk and one clerk.

The Postal Telegraph-Cable Company is represented at Helena by Mr. P. O'Reilly, formerly of the Western Union at Washington, D. C., and

manager at New York City, having for one of his able assistants Mr. Pat McCann, who was educated in the operating art at Helena.

With the Boys in Kansas City.

The force in the Western Union office in Kansas City in 1876 was very small and was composed of the following gentlemen: Mark D. Crain, day chief; Jeff W. Hayes, night chief; George M. Myers, Topeka wire, days; John Brady and his brother Peter, way wires; George McMahon, St. Louis wire; John R. McGill, Associated Press wire; M. D. Woods, was manager and Mike Ferris was counter clerk, delivery clerk, and bookkeeper.

The scene has changed and in 1916 the company employs half of a regiment of people. The city is a most beautiful one and the office is one of the best equipped and managed in the country, despite the handicap of occupying a very old building.

H. G. Gostings, chief operator is quiet, unobtrusive, but alive, every minute, to watch the company's interests.

V. L. Thornton, assistant day chief, is a live wire. He has much to do and his work is done well. He is highly respected by the operators and he is held in esteem by the writer of this article. William Hieser is night chief and Virgil Ryan is clerk to the chief operator. George W. Brownson, the manager, was at one time one of the crack operators of the country. Mr. Seaman, assistant manager, is also an old time operator and has been manager of several important offices in the western division. W. B. Halpin is chief clerk to the manager and possesses a double share of urbanity and courtesy. Among others we met during our visit to Kansas City we are pleased to mention the following: J. Q. Stone, J. F. Dowd, E. S. Barrett, Wm. A. Lowery, F. E. Draper, M. C. Newkirk, C. A. Pace, A. J. Allen, A. R. Frymore, A. C. Harper, Virgil Ryan, Annie E. McVicar, G. D. Gammon, Thos. H. Patterson, James W. Stobaugh, Thos. A. Lyons, W. M. Hannon, H. W. Mayfield, Granville J. Kelly, C. F. Roller, Jos. M. Clifford, W. L. Robinson, G. S. Fox, Andrew Kehoe, R. H. McAfee, Fred. A. Elder, Arthur G. Hahn, J. D. Brubaker, Maude Shoemaker, C. M. Haley, Jno. D. Bennett, T. L. Ballow, E. J. Hughes and F. A. White.

Forty Years Later.

It is a long time from 1876 to 1916, and events extraordinary have occurred in St. Louis, Mo., during this interval.

The old Western Union office at Third and Olive streets, where we used to climb to the seventh floor every evening, is a telegraph office no longer.

The present home of the Western Union is in a beautiful building with luxurious surroundings, affable and courteous clerks and a wideawake, zealous manager with capable lieutenants, are on duty.

Mr. C. W. Mitchell is manager and is a gentleman keen to the interests of the company. E. F. Roe, assistant manager, is an able second to his chief and D. F. McDumolt ably handles the deliveries.

The machinery of the commercial department is well oiled and works like a clock. W. J. Armstrong, district traffic supervisor, was a first class operator in his time and he has made the art of telegraphy a life study, and there is nothing about a telegraph office that is strange to him. He has had much experience in the handling of men whose respect he holds.

Mr. A. C. Cronkhite, commercial superintendent, is an active, energetic gentleman, ever alert in the company's affairs. He is ably assisted by J. E. Callahan, chief clerk.

In the operating room, G. R. Alger officiates as chief operator. He is a young man and was appointed to this position when he was twenty-five years of age, probably the youngest chief operator of any large office in the country.

Mr. Alger is not only a student of his beloved art of which he is very proficient, but possesses an intuition which enables him to read and lay bare human character.

This gentleman is perhaps unknowingly qualifying himself for future advancement which is bound to come.

G. W. Herrin is assistant chief operator and he fills the position faithfully and well. Chas. E. Garrard, is day chief of the checks and Henry Knaus is night chief of checks.

Arthur Mitchell, night chief of this office, possesses a rare talent for painting. Several pieces of his handiwork were on exhibition at the Lewis and Clark world's fair in Portland, Ore., in 1905, and one picture was displayed at the Panama-Pacific fair in San Francisco in 1915, but, somehow, Mr. Mitchell takes a delight in working in the telegraph office.

We had the pleasure of meeting the following, whom we hope will become enthusiastic readers of TELEGRAPH AND TELEPHONE AGE: E. Aring, A. R. Burge, Wallace L. Beck, J. R. Bohan, J. A. Bollato, S. Clayton, W. E. Callaway, C. W. Crary, O. R. Carson, F. H. Crain, Emma K. Daniels, J. S. Dunbar, P. H. Dillon, Minnie E. Dunn, Louis Ferris, Robert I. Flowers, Frank X. Flotron, Jr., J. W. Farley, J. C. Fallinger, R. L. Glaze, A. J. Gorosky, A. F. Giessman, W. E. Hart, A. M. Harris, Nathan B. Horowitz, Mrs. Minnie Hause, F. W. Hogue, Robert James, W. P. Jost, Paul L. James, Jos. A. Kunce, John J. Kelly, E. H. Kennedy, D. J. Kelley, J. H. Kennedy, H. M. Kennedy, Thos. J. Keeley, J. H. Korner, R. W. Logan, H. A. Lyne, D. S. McFarland, G. W. McCluen, F. M. Murray, J. J. McCruden, Sarah Miller, J. J. McHugh, Edmond A. Noss, W. T. Owen, J. B. Rice, John Seeman, Wm. J. Score, Vic. Schuler, Thos. P. Scally, Louis Schofield, A. F. Templemeyer, A. Turner, W. F. Thoroe, K. Turpin, W. F. Thomas, LeRoy Williams, Margaret K. Willmann, Roy Weaver, G. E. Welch, J. W. Campion, P. C. Cooper, J. E. Dunlap, C. C. McLellan, G. Wyly, E. J. Dunn, Mrs. L. Hays, S. Betts, B. P. Cooper, L. M. Hood, F. P. Mullin, R. J. Ludwig, R. E. Power, A. Kern.

On the Wing.

There is probably no city in the state of Illinois which has such historical recollections as Spring-

field. This city was the home of the illustrious Abraham Lincoln and it now is his last resting place. A great deal of business is handled at this office and sometimes as high as a million words of press matter is sent from here in one day during the session of the legislature. The operators are, consequently, first class men. The personnel of the Springfield Western Union office is as follows: L. L. Miller, manager; R. H. Fessenden, day chief operator; Lon F. Hornbeck, night chief operator; Harry B. Briscoe, late night chief operator; Henry Hitterbusch, "Hank"; Carl F. Benner, James C. Fessenden, and Joe E. Berry.

JEFF W. HAYES' NEW BOOK.

Autographs of Distinguished Telegraph, Telephone and Railroad Men, by Jeff W. Hayes, just placed on sale is a work that every telegraph man should possess. The price of the book is \$1.15 per copy, carrying charges prepaid. Copies may be obtained of Telegraph and Telephone Age, 253 Broadway, New York, and J. W. Hayes, Room, 305, Western Union Telegraph Building, Chicago, Ill.

The following tribute from the pen of Mr. E. W. Collins, general superintendent, Postal Telegraph-Cable Company, Chicago, himself a fluent writer, speaks for itself:

"I have read your new book 'Autographs and Memoirs of the Telegraph' with deep and friendly interest and have no hesitation in saying that your efforts have resulted in enriching the telegraph literature of the world. You have interspersed your own creations with good stories from the pens of some of the charming story tellers of the profession.

"As we turn the leaves an old familiar face looks smilingly at us and we smile back in recognition and hurry along to the next page only to be confronted with a bunch of autographs—many of them in the well remembered chirography of years ago when life was young and nerves steady.

"'Evangeline' up on her wee toes shows eager interest in her daddy's marvelous work on the typewriter with darkness all about him, he seeing only with his heart! Donald McNicol with his 'Poetry of the Telegraph' tells us that he is a lover of the beautiful and that there has been culture and refinement all along the line! Walter P. Phillips, the prince of story tellers, even while living in the shadow of recent crushing bereavements, dips his pen in sunshine and produces for us 'Ethelinda,' sweet and charming! W. J. McGuire in his story 'Without Props' has contributed to our enjoyment and the Author of the book has made the crowning effort of his life to give us a work worthy of a prominent place in our library. More power to him!"

LETTERS FROM OUR AGENTS.

NEW YORK POSTAL.

Laboring all night, December 7, at a dangerous spot near the entrance to the Pennsylvania Railroad tunnel at Homestead, N. J., cable repairer Johnson succeeded in restoring to the service fifteen wires which had been rendered unfit by a "pin-hole" in a cable.

Clarence H. Krewson, printer chief, Philadelphia, accompanied by his bride, formerly Miss Miller, of the same office, visited our printer department recently. Harry Harbour, of the Trenton, N. J., office, also paid us a visit.

Traffic chief Fred Crippa has resigned to enter other employment. Quad chief M. D. St. John has been transferred to an early night trick, Frank O'Keefe being assigned to fill the vacancy, days.

Miss C. Fairbanks, printer operator, resigned and left for Kansas City, where she will reside.

H. V. Price, W. F. McDonald, Howard Pierce and Chas. J. Burt have been appointed to the operating force.

Resignations include operators R. R. Johnson, Geo. H. Cooper, F. C. Brand, J. Bregman, M. Strauss, J. T. Crone, J. Nagle, M. E. Duff, Chas. T. Hoyt, J. F. McMahon and Miss P. Zeigler.

A boy arrived at the home of "Mike" O'Donnell last Saturday and Mrs. O'Donnell and baby are doing well. Mrs. O'Donnell, who was Mary O'Sullivan before her marriage, was employed in this office as a check girl and later as an operator, and both she and her husband are old employes. Mr. O'Donnell is stationed at the 20 Broad Street office, working the fast Pacific wire to San Francisco.

NEW YORK WESTERN UNION.

The Western Union Educational Society of New York held its first entertainment of the season at 24 Walker Street on November 21. An attractive programme, opening with an overture by the Western Union Orchestra, was enjoyed. S. B. Haig, president of the society, made an address of welcome. Miss Grace Drake of the Jersey City office, Miss Dora Laufer, Thos. Skidmore and Warren Taylor, all of the New York main office, contributed with vocal solos, and J. R. Dunn and Frank Calvani with banjo and cello selections. G. E. Palmer, chief operator, spoke of the society, its purposes and advantages. F. T. Albert, secretary of the Benefit Fund Committee gave the principal address of the evening explaining the benefit plan. He spoke of the work of the committee throughout the Western Union system. Dancing after the entertainment was an enjoyable feature. One hundred and fifty new members were enrolled within three days after the entertainment. Newcomb Carlton, president of the company, was in the audience.

Otto Bj. Arnar, assistant superintendent of the government telegraph department, Reykjavik, Iceland, on his initial visit to the United States recently, visited the main office. He was very much interested and surprised to know that typewriters were used exclusively in receiving messages on Morse circuits. Mr. Arnar stated that lead pencils answered the purpose in Iceland, a carbon impression copy being taken for the records. When told that one of our expert lady Morse telegraphers maintained an average of eighty-one messages per hour for an entire month he immediately asked to have the lady pointed out to him. Mr. Arnar said that the Wheatstone is the only mode of automatic telegraphy used in Iceland. He was surprised to know that this office handled considerably more than 1,000,000 messages weekly and remarked that throughout the whole of Iceland they transmitted about 10,000 messages each month.

J. J. Griffin, formerly of this office, was recently appointed division inspector of automatic apparatus for the Eastern Division.

Harold F. Schwartz, one of our operators, and Miss Rae H. Schwartz, an operator in the main office at Boston, were married in Brookline, Mass., November 27.

J. R. Heidemark, Sr., of the operating department, was pensioned on December 1.

Operator C. F. Ludington of this office died December 6 and operator W. E. King, Sr., died December 9.

M. P. Poindexter, Jr., of the Lynchburg, Va., office, has been added to the test and regulating department. Mr. Poindexter is a native of Virginia and has been identified with the Western Union service at Lynchburg for many years. He is the son of M. P. Poindexter, Associated Press operator at that point.

BOSTON WESTERN UNION.

The first dancing party of the Western Union Educational Society of Boston was held in Howe Hall, Boston, Monday evening, December 4. The affair, which was a splendid success both socially and financially, was under the management of chief operator J. B. Rex, of the Boston main office, who is president of the society, A. Stevenson and G. T. Dee, vice-presidents, and H. T. Jones, secretary-treasurer. A committee consisting of W. G. Wetmore, G. W. McMenimen, H. E. Stickney, J. J. Coughlin, L. J. McLeod, W. M. Isles, Miss M. A. Sullivan, Miss J. Sutcliffe, Miss A. J. Greene and Miss M. E. Smith had charge of the hall during the evening. The society has grown rapidly during the past few months and membership has increased until well over 300 traffic employes are enrolled. Arrangements are being made to hold a New Year's banquet and dancing party.

The night force in the plant department is just about the same as a year ago with but a few exceptions.

J. M. Mullin is now all-night chief, W. I. Watterson, assistant; Edward Corrigan, early night wire chief, ably assisted by J. M. Madigan; "Alec" Thompson, night repeater chief, W. T. Budds, assistant. We still find Charles Davin at the assorting desk in charge of that department.

PHILADELPHIA POSTAL.

Business continues very brisk and all extra men are making good time. Samuel Finkelstein has been recently added to the operating force.

W. B. Ray of the operating department is the proud father of a "new arrival at his home."

C. E. Bagley, superintendent, has returned from a trip of inspection through his district.

Cable installer J. M. Eder has returned from Washington, D. C., where he has been engaged for some time in making repairs.

Stationman D. Rhein at Reading, Pa., announces his marriage to Miss Mary Rhine also of Reading, Pa. The newly wedded couple have the best wishes of their friends.

Among the recent visitors here were Henry Reinoehl, chief clerk, booking department, Chicago, Ill.; C. E. Diehl, manager, Harrisburg, Pa.; J. S. Ellis, assistant superintendent, New York; Thomas O'Rourke, stationman, Newhope, Pa.

R. B. Ziegler of the operating department here for a number of years died December 9. Mr. Ziegler was formerly of Harrisburg, Pa., and is well known there.

CHICAGO WESTERN UNION.

Robert Brand, better known as Dr. Brand, well known on the night force for many years, died suddenly December 2.

Christmas Greetings.

Especially my associates during the sixties, seventies and eighties, when I was located in Chicago (Ex). While more than thirty years have passed since severing my connections with a telegraph company, in heart I am still with those whose companionship was ever pleasant.

S. L. ROBINSON,
Petoskey, Mich.

PITTSBURGH WESTERN UNION.

On November 30 the 250 messengers of the Western Union Telegraph Company at Pittsburgh, Pa., were tendered a thanksgiving dinner at the rooms of the Central Y. M. C. A. by the company. The messengers neatly uniformed and the band of eight pieces, also in Western Union uniforms, marched from the Western Union Building to the Y. M. C. A.

The day boys dined in the evening and the night boys at noon. At both dinners they were addressed by A. C. Terry, district commercial superintendent; L. L. Leith, manager, and A. L. Mould, secretary of the Y. M. C. A.

The occasion was made somewhat unusual by the interest taken by T. B. A. David, now over eighty years of age, who, with Andrew Carnegie, was a messenger in Pittsburgh in 1850. In the 60's Mr. David was superintendent for the Western Union Telegraph Company at Pittsburgh.

After the noon and evening dinners vaudeville and moving picture shows were provided. The appearance of the boys was so creditable that the newspapers illustrated the parade.

On December 2, in order to show their appreciation, the messenger boys procured a handsome bouquet of chrysanthemums which they took to Mr. David's house and presented it with their compliments. In appreciation of the thoughtfulness of the messenger boys, Mr. David sent a letter of thanks.

ST. LOUIS WESTERN UNION.

On Monday evening, December 4, the traffic supervisors and testing and regulating employes of the St. Louis office, held their monthly meeting at the American Hotel annex. After a dinner, at which covers for forty-five were laid, assistant chief operators F. P. Mullen and C. W. Herrin of the traffic, and wire chief P. D. Herron read papers on matters of interest in their branches of the service, which were discussed. Traffic superintendent W. J. Armstrong presided over the meeting. Commercial superintendent A. C. Cronkhite, manager C. W. Mitchell and chief operator G. R. Alger, were also in attendance and a very enjoyable and interesting evening was spent by those present.

On December 4 H. Milan, operator in the fast premium division, was married to Miss Adalaide Smith, of New York City. Mr. Milan's many friends in the office wish them a long life of health and happiness.

CLEVELAND POSTAL.

It seems as though the bug of matrimony has struck the Cleveland Postal office. To start the bug buzzing Miss Lillian Gelb, for the past three years route clerk but recently operator at the general electrical division, and G. A. Fitzgerald, also until recently of the Postal, slipped out Thursday,

November 2, unknown to their most intimate friends, and were quietly married, and had no sooner got back and started to work when the bug started in its work again, this time on Miss Loretta Dolan and Odbert Miller, both of the main operating room, Monday, November 20. Manager Lafferty's daughter, Miss Alberta, and Clarence Foor, then pulled it on the quiet, Saturday, November 26, making three marriages in a month and all parties from one office.

ANNUAL MEETING OF SERIAL BUILDING LOAN AND SAVINGS INSTITUTION.—A meeting of the shareholders of the Serial Building Loan and Savings Institution will be held at 195 Broadway, New York, December 19, to nominate officers and directors, and the annual meeting of shareholders will be held at the same place January 16, 1917.

"LEARN BY DOING"

Five minutes of actual practice properly directed is worth more to a man than years and years of book study. Indeed, Actual Practice is the only training of value, and graduates of the N. Y. Electrical School have proved themselves to be the only men that are fully qualified to satisfy EVERY demand of the Electrical Profession.

At this "Learn by Doing" School, a man acquires the art of Electrical Drafting; the best business methods and experience in Electrical Contracting; together with the skill to install, operate and maintain all systems for producing, transmitting and using electricity. A school for Old and Young. Individual instruction. School open to visitors. 9 A. M. to 9 P. M.

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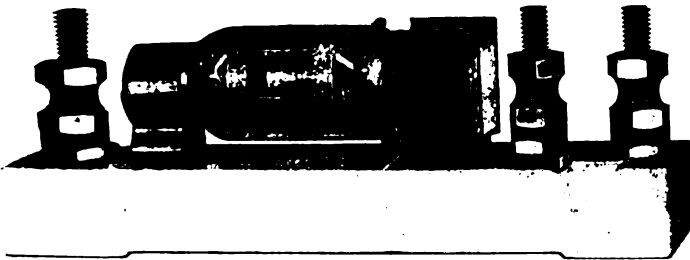
"No man spends exactly what he earns. He is either in debt or ahead of the game. Keep ahead by saving a little constantly and regularly. Begin now."

Western Union Building, 16 Dey Street, 9 a. m. to 5 p. m.
Postal Building, 253 Broadway, Room 1030, 2.30 to 4.30 p.m.,
Fridays, and each 15th and last day of month.
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Rubber Telegraph Key Knobs.

No operator who has had to use a hard key knob continuously should fail to possess one of these flexible rubber key caps, which fits snugly over the hard rubber key knob, forming an air cushion. They render the touch smooth and the manipulation of the key much easier. Price, fifteen cents. J. B. Taltavall, TELEGRAPH AND TELEPHONE AGE, 253 Broadway, New York.



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PHILLIPS' CODE THOROUGHLY REVISED AND BROUGHT UP TO DATE (JULY 1, 1916)

Price, \$1.00

Mr. Eugene E. Bruckner, the well-known press operator now located at Chicago, Ill., has, under the authority of Walter P. Phillips and with the assistance of a number of officials and operators in the press service, thoroughly revised Phillips' Code, and the new edition was ready for delivery on June 1, 1914. Mr. Bruckner was considered by Mr. Phillips the most competent authority to undertake this important work, and so satisfactorily has the task been accomplished that the finished book has received the stamp of approval of the Associated Press, the United Press, the Publisher's Press, and all other newspaper agencies, as well as the endorsement of press operators, well qualified to judge of the merits of the new book. A large number of officials and operators in the press service were also frequently consulted on the revision.

The new book was desirable for the same reasons that makes necessary a revision of scientific text books with the progress of each decade.

Thirty years ago, when Mr. Phillips first published his work, a large number of words were used that today are almost obsolete, and several hundreds of others, not provided for then, have come into general use. Provision must therefore be made for the newer modes of expression.

As indubitable evidence of this need, men who have joined the ranks of the press associations in recent years have found themselves wholly perplexed, and have been humiliated by apparent incompetence owing to their inability readily to interpret hundreds of contractions in constant use but not honored by Phillips' Code.

The whole object of the revision has been to promote greater accuracy and reduce memorizing to a minimum. Under the new system, an operator who knows the code for *Assist* does not need to know the specific contraction for *Consist*, *Desist*, *Insist*, *Persist*, *Resist*, etc., for all are formed upon the same basis. Nor is it probable that the operator could make a mistake in their translation if, by force of sheer will power, he tried.

The price of Phillips' Code is \$1.00.

Remit by post-office or express money order to

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Publisher

ESTABLISHED 1883

Issued on the 1st and 16th of each month

Price, \$2.00 Per Year

\$1.00 for six months. 50c for three months

No doubt you are aware that TELEGRAPH AND TELEPHONE AGE is the only publication in this country devoted exclusively to the interests of the telegraphs, the telephones, wireless telegraphs and submarine cables. In the pages of this magazine are recorded the activities of the different societies, associations, clubs, etc., both social and official, connected with the various companies.

Our correspondents and agents all over the United States and Canada and throughout the world secure for us the facts of all the important events connected with these industries, so that we are enabled to present them to our readers in a clear and concise manner.

The value of the magazine does not end here, however. We have special articles for the thinker; those who wish to advance themselves in their respective line of employment.

The following partial list of contents gives a slight idea of the advantages to be gained by a subscription to this paper. These items appeared in the year 1915. They were carefully prepared by writers of acknowledged ability, and are scientifically correct:

The Alternating Current Phase of the Telegraph, C. G. Allen; Some Primary Battery History, D. McNicol; Wet Batteries and Their Uses, J. C. Wright; Instructions for the Installation and Maintenance of Caustic Soda Cells, W. E. Harkness; Application of Science to Telephone Engineering, G. S. Macomber; Dynamos and Motors, J. F. Skirrow; Radio Telegraphy and Telephony for Railroads, J. L. Hogan, Jr.; Relation of the Law to the Telegraph, F. R. Stark; Pole and Wire Maintenance, E. H. Ward; Early Telegraph Tariffs, B. B. Adams; Developments and Opportunities in the Philippines, S. W. Beach; The Field for Printing Telegraphs in Railroad Work, J. O. Carr; Screened Cable Conductors and Their Application to Telegraph Service, R. E. Chetwood; Reducing Economic Waste, C. R. Fischle; Reminiscences of the Civil War, Dr. W. D. Gentry; Local Distribution of News by Printing Telegraph, J. G. Randolph; Assassination of President Lincoln, David Homer Bates and Geo. C. Maynard; Earth Currents Mistaken for Induced Alternating Currents, J. B. Taylor; Transferring Cost of Efficiency, S. S. Scothorn; Valuable Engineering Articles: Wireless Rescues and Safeguards; English vs. American Telegraph Service; Telephone Trouble in the Tropics; Morkrum Printing Telegraph System (detailed illustrated description); The Western Union Multiplex System (detailed illustrated description); How American Notes Are Sent to Germany; How Submarine Cables Are Made, Laid, Operated and Repaired; Early Telegraph Days in Canada, by R. F. Easson, and hundreds of other interesting and important items.

One of the reasons why TELEGRAPH AND TELEPHONE AGE has become the successful magazine that it is, is because of the interest and co-operation it maintains with its subscribers. Any questions, whether technical or otherwise, are always cheerfully answered either in its columns or in letters.

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It is safe to state that so complete a work on practical telegraphy was never previously produced. It is the standard work of reference in America. It is authoritative, the assistance of the officials and engineers of the telegraph, wireless and other companies having been secured in the preparation of the descriptive matter and the illustrations.

Telegraph engineers, railroad operators and students will find that a copy of this book will be indispensable. The vast fund of information that has been provided is surprising, and the book will be a rich possession to every progressive telegraph and railroad man who wishes to know how to manage switchboards and test for wire trouble. Price, \$2.00 per copy.

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A CORRESPONDENCE SCHOOL COURSE.

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It is a valuable addition to telegraph literature and no other work covers the field as it does. As its name implies, it is a course of instruction in the elements of practical and technical telegraphy and during the time of its publication in the columns of this journal great and wide interest in the subject was manifested. Its instruction has started many ambitious telegraph and telephone employees on careers of greater usefulness to the companies employing them as well as to themselves.

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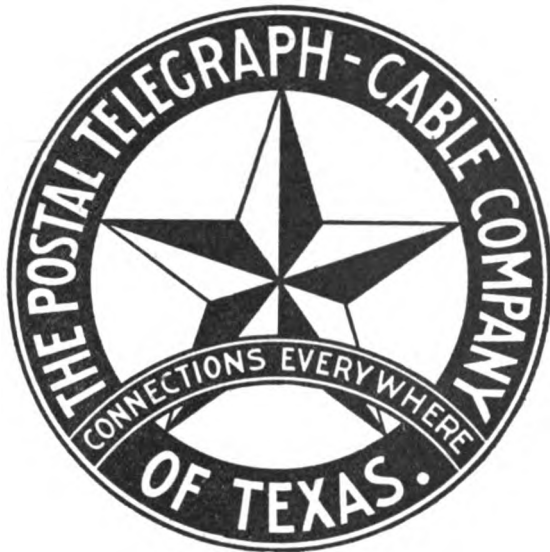
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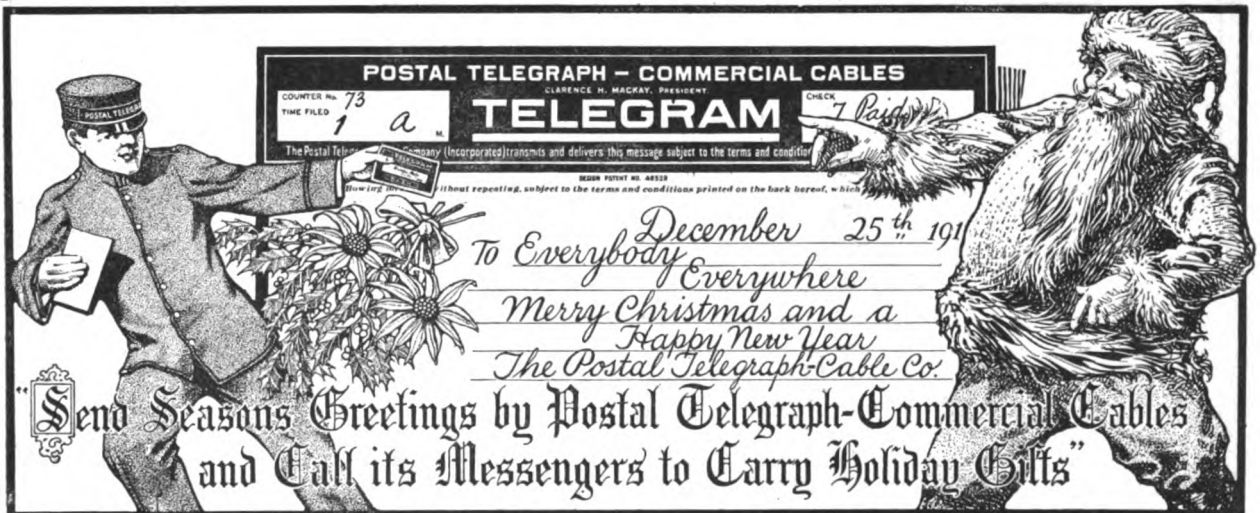
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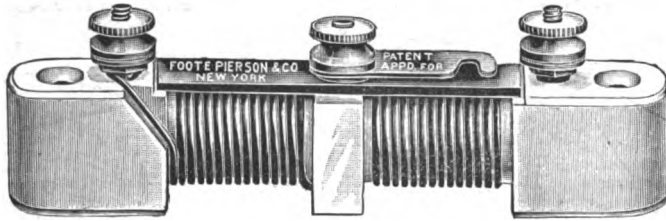
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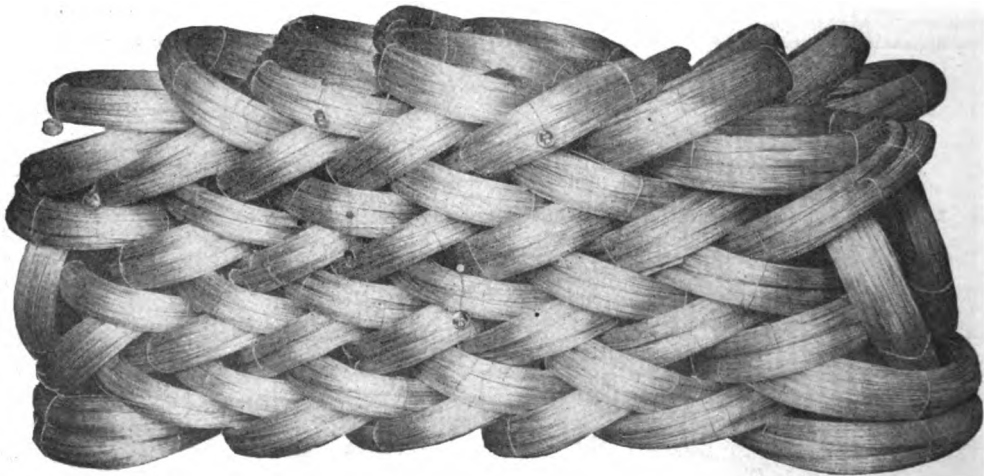
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